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ABSTRACT

Twelve papers focus on issues involving severe behavior disorders in the schools and autism. The following papers are included: "Behavioral Ecology--A Unifying Strategy for the '80s" (F. Hewett); "Academic Skill Development--The Promise of Modeling Strategies" (R. Gable, J. Hendrickson); "Future Directions in Self-Control Research" (R. Rueda); "Allocating Opportunity to Learn as a Basis for Academic Remediation--A Developing Model for Teaching" (C. Greenwood, et al.); "Establishing Criteria for Social Behaviors" (K. Howell); "Educational Setting for the Primary Prevention of Child Abuse and Neglect with Adolescents" (S. Bavolek); "Behavioral Contracting with Behaviorally Disordered and Delinquent Children and Youth--An Analysis of the Clinical and Experimental Literature" (R. Rutherford, Jr., L. Polsgrove); "Prediction of Post-Discharge School Adjustment from Social and Academic Gains during Psychiatric Hospitalization" (S. Forness, et al.); "Instruction for Autistic Children--Some Critical Problems and Possible Solutions" (R. Neel, F. Billingsley); "Classroom Hearing Assessment--An Operant Training Procedure for the Non-Verbal Autistic Child" (T. Scruggs, et al.); "Transfer of Training in Severely Autistic and Severely Retarded Children" (M. Kaufman, P. Alberto); and "Who's Crazy?" (C. Nelson). (CL)

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Summer 1981

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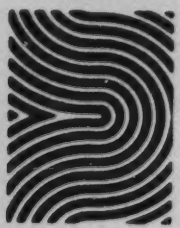
In Behavioral Disorders



Severe Behavior Disorders of Children and Youth

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The Council for Children with Behavioral Disorders is a national professional organization for those interested in the education and well-being of behaviorally disordered individuals. The Council functions to develop lines of communication and interaction among professionals, disciplines and organizations; to promote adequate programs for recruitment, training and consultation; to encourage research and development; to support legislation for services to these children. Toward this end, the Council publishes a quarterly journal, *Behavioral Disorders*, and sponsors national conferences in relation to these interests. An organization of some 4,400 members, the Council maintains central offices at 1920 Association Drive, Reston, Virginia 22091.

Monograph in Behavioral Disorders is a special publication issued by the Council for Children with Behavioral Disorders to augment the organization's quarterly journal, *Behavioral Disorders*. The *Monograph* is designed to treat topics in an intensive, highly-focused manner not usually appropriate for standard journal presentation.

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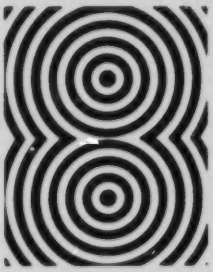

Severe Behavior Disorders of Children and Youth

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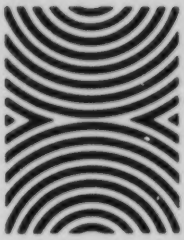

Preface

This fourth volume in the Arizona State University, Teacher Educators for Children with Behavior Disorders, and the Council for Children with Behavioral Disorders monograph series represents the continued importance that ASU, TECBD, and CCBD place on quality research and practice in the area of "severe behavior disorders of children and youth." The papers presented here are a sample of the 66 papers and workshops presented to the Fourth Annual ASU/ TECBD Conference on Severe Behavior Disorders of Children and Youth. To date, 205 papers have been presented at these conferences and 69 papers have been published in the four volumes of the Monograph series. These figures attest to our continued concern for children and youth who have social behavior problems to such a degree as to be considered severely behaviorally disordered.

The challenges offered by Frank Hewett in his keynote paper, "Behavioral ecology: A unifying stategy for the '80s," and by C. Michael Nelson in his CCBD President's paper, "Who's crazy?", set the stage for all of us who are concerned about quality research and practice in the area of behavior disorders, to rethink, re-evaluate, retool, and recommit to these children and youth. The remaining papers offer a variety of examples of how their challenges can begin to be met.

We, the editors, would like to express our appreciation to Dr. Robert T. Stout, Dean of the College of Education at Arizona State University, for his continued support of the conferences and the monographs. Without his commitment to our efforts, we doubt that these products would ever have come to fruition.

Thanks are also offered to the Council for Children with Behavioral Disorders for their long-standing support of the Monograph series.

Robert B. Rutherford, Jr., Ph.D

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Behavioral Ecology: A Unifying Strategy for the '80s

Frank M. Hewett

Twenty-five years ago when I first began working with children and adolescents with learning and behavior problems, the concept in vogue was "holistic." That is, it was not enough to be concerned with the learning or behavior problem per se; one had to consider the whole child—his or her health, ability, previous experience, family relationships, and so on. In so doing, there was the implicit belief that the actual problem to be dealt with resided within the child. The child was afflicted in some way, neurologically, medically, psychologically, socially, or educationally.

As a result of this holistic orientation, a team concept was developed. The team consisted of a variety of specialists, each supposedly equipped to study and analyze one or more of the pieces that made up the jigsaw puzzle, "whole child." Case conferences, during which a multidisciplinary "show and tell" occurred with each specialist demonstrating his or her expertise with respect to the child and the problem, were fashionable. The team captain was a physician, usually a psychiatrist, and the specialists with "clout" were readily identifiable with the fields of medicine and psychiatry. The old-fashioned social worker role had given way to that of "psychiatric" social worker. Internists, neurologists, pediatricians, and other medical consultants were frequently invited members to these case conferences. In addition, in institutional and some residential care settings, the rehabilitation therapist, the occupational therapist, the psychiatric nurse, and the psychiatric technician, all firmly rooted in medical tradition, might also contribute.

And then there was the psychologist, the only non-medical specialist on the team. What about the special educator? Twenty-five years ago those who worked in educational settings with children with emotional and behavioral disorders were well-liked and respected by the team members. In fact, they performed a valuable service by keeping the children busy, helping them learn to read, and generally operating a "fun and games" program which, in the institutional setting, might best be appreciated for its babysitting function. The teacher and the school were not viewed as integral to therapy and treatment efforts with the child. Special education was fine, but it was not therapy. What the other specialists provided *was* therapy. Sick people get better with therapy. The "fun and games" atmosphere of a rehabilitation therapy session might quickly be described to a visitor as "ego enhancing" and "emotionally cathartic." In reality, the session is indeed just fun and games. But what went on in the classroom was different. Somehow the doctors and others, recalling their own elementary and secondary school experiences, created a stereotypic image of

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the nice, well-intentioned, dedicated "school teacher" to join their other stereotypic images from the past of the friendly postman, the helpful druggist, and the dependable police officer. These folks, including the teacher, provided *services*. In no way could it be called therapy. Special education was on the outside, looking in. It was an ill-defined discipline with respect to its role in helping disturbed children.

However, during the late 1960s and the 1970s special educators came to be viewed more and more as members of the multidisciplinary team and their efforts as definitely essential in helping disturbed and other exceptional learners to "get better." So now we had acceptance. But a lingering question persisted. What was really unique about special educators? Who were we really? Where had the field of special education come from, anyway?

These questions lead to a reflection regarding our roots. These roots are not in education. They are in medicine. Itard, perhaps the first special educator to systematically apply a special curriculum with an exceptional child and to document his results, was a physician. His protégé, Sequin, was a physician. Howe, who helped begin special education services in this country, particularly for the blind, was a physician. Montessori, who translated Sequin's works and applied them to disadvantaged children in Rome, was a physician. Orton, who studied reading disorders and blessed us by conjuring up terms describing such academic illness as "dyslexia" and "strephosymbolia," was a physician. So were Strauss and Werner, who launched the still complicated and controversial quest to understand and help non-retarded individuals who demonstrate specific and persistent problems in learning.

Yes, the doctors got there first. Along the way there were some dedicated psychologists who also made significant contributions—Fernald, Lehtinen, Kephart, Kirk, Cruickshank, Bettelheim, and Redl, to name a few. As the actual field of special education has come into existence in the late 1960s and the 1970s, we have tended to emulate our medical and psychological heritage rather than develop an indentity of our own. We have relied on the physician to aid us by prescribing drugs, and we are influenced by the psychologist with respect to diagnosis and behavioral approaches and by the psychiatrist with respect to psychodynamic and other therapeutic approaches.

So special education is a patchwork quilt discipline. We have borrowed in a piecemeal fashion from medicine and psychology, and our borrowing has resulted in a myriad of biases and orientations. These biases, linked to our noneducational heritage, have tended to work against our achieving a unified disciplinary status. In addition, this heritage has resulted in our succumbing to the molecular fantasy, that by breaking the complex into its simple parts and by dealing separately with each part, the complex is modified.

The hyperactive child who is in all sorts of trouble at home and at school is given a drug. The assumption is that, by attacking the part of the child's problem related to appropriateness of activity level, things will get better. The parent and the teacher may sit back and wait for a miracle to occur, but it may not. The effectiveness of the drug in relation to activity level may be overshadowed by its negative effects on the child's self-concept or on teacher expectations ("I can relax and provide my regular assignments now that Johnny's taking a drug," or in front of the class, "Johnny, you're not paying attention today. Are you sure

you took your pill?"). Helping a child in trouble at home and at school is much more complex than merely assuming that by attacking a specific part of the problem we will bring about a solution.

An autistic child is trained, using behavior modification techniques, to reduce self-stimulatory behavior. The assumption is that by reducing such behavior the child will become more accessible and will learn more effectively. But reducing self-stimulation in the training setting is one thing; accomplishing generalization of that reduction to other settings is another. Here is another example. A mother nags her son at the rate of 80 times an hour. We teach her to use certain reinforcement principles, and her "nag rate" drops to 15 times an hour. The only trouble is that she becomes extremely upset and has a nervous breakdown. Change a behavior and you are automatically home free? No way.

A disturbed child is having trouble learning to read. The molecular fantasy tells us to break reading down into its component parts and teach the child on a preacademic level. The assumption is that as mastering of component parts occurs, this will have a cumulative effect on the reading problem. Circle drawing may be followed by square drawing, which in turn may lead to balance beam walking with "angels in the snow" thrown in for good measure. The child draws great circles and squares as a result of our training efforts, and his or her balance beam walking and angels in the snow are first rate. But does reading ability automatically increase? Studies in general suggest that it does not.

Finally, a disturbed child is having trouble at home and at school. Let us have him see a psychotherapist, say, twice a week. Our assumption is that these 100 minutes (or 90 minutes, as the case may be) are going to lessen the child's inner conflicts, and as a result his outer troubles will surely decrease. That is a tall order, and while two therapy sessions a week may aid a troubled child, it is naive of us to think that we are also making an impact on the forces in the child's environment which are inextricably a part of the problem. In the film, *Ordinary People*, a troubled young man attempts suicide as a result of deep guilt and depression. He undergoes treatment in a residential center for several months and returns home. His grandmother, upon hearing that the young man has started seeing a psychiatrist in the community on a regular basis, exclaims with a puzzled look on her face, "Why I thought that was all behind us now. I thought they took care of that at the hospital!" Yes, people with appendicitis do get better and stay better after an operation and sojourn in the hospital. What a shame that some people apply the same logic to emotional problems. I had occasion to work with a troubled young man of 16, who had serious problems with a hostile father. We seemed to be going nowhere until one day the young man shared with me that each week when his father sent me a check, he called his son over to the check book, explained the family finances, and commented, "Think how much better off we would all be if we didn't have this bill to pay." I was really working at a serious disadvantage in this climate of guilt, anxiety, and anger. I needed much more involvement with this young man's total life situation.

The point all of this is leading up to is, I believe it is time to recognize the molecular fantasy for what it is. Children with emotional behavioral and/or learning problems need much more than specific intervention strategies provided on a piecemeal basis. They need a total intervention aimed at every facet of their lives, their environments, and yes, their *ecosystems*. The notion of the

"whole" child waiting to be treated or trained by diverse specialists, each aiming at a very specific aspect of the problem, is old-fashioned. It assumes that the locus of the problem is in the child when, in truth, the locus of the problems with which disturbed children must deal is in the ecosystem—the complex interplay of all of their relationships and experiences, past and present.

Ecological psychology is now new. It began in the 1940s and 1950s as a very complex field of study aimed at pinning down and defining relationships between individuals and their environments. In the early 1960s the ecological concept was applied to a model called Project Re-ED for working with disturbed children. A residential program concerned with "re-education" rather than "treatment" or "therapy" was set up in Tennessee and a staff of educational specialists, including one individual solely concerned with each child's ecosystem, put in charge. It was based on the belief that it is futile to treat "whole" children; that one must treat whole ecosystems. I will not attempt to describe the Re-ED model here.

When I first learned of the Re-ED model some twenty years ago, I saw it as solid in concept but unrealistic in terms of goals and aspirations. Those were the days when I was applying behavioral approaches in the teaching of communication skills to autistic children *behind locked doors*. After all, if their parents knew what I was doing or were invited to participate, surely everything would have gotten messed up. That, as time has demonstrated, was a naive, tunnel-visioned, and erroneous belief. Any hope autistic children have for improving their functioning levels lies in the efforts of all those people in their ecosystems, particularly their parents.

A behavioral focus has proven useful over the last two decades in the development of both institutional and public school programs for disturbed children. I believe it can be retained and broadened under the larger concept of the ecosystem, as can strategies involving drugs, training exercises, and one-to-one and group therapy. In fact, the ecological perspective provides the framework for unifying the diverse approaches to working with disturbed and other exceptional individuals in special education. I believe it holds promise for bringing us together as a discipline—as a field not patched together with historical alliances with, and dependencies on, medical and other disciplines, but a field that has its own unique indentity.

The prospects for an ecological approach to assessment are particularly exciting to me. In the past the "whole" child has been examined, usually by isolating him or her from the environment. Since the problem resided somewhere inside the child, it was logical to shine one narrow disciplinary spotlight after another on the child, in an effort to explain the problem. I believe this approach has outlived its usefulness, at least in terms of narrowness of focus. What if we set the child aside for the moment and turned a broad-beamed ecological spotlight on his or her ecosystem, on all its key individuals and settings, and tried to understand them first before we examined the child? Roger Barker uses an example of an Englishman trying to understand the American game of baseball, particularly as it relates to the first baseman. Using our traditional approach to assessment, he might sit in the stands with field glasses and zero in on the first baseman and all that he does. He could keep records of number of balls caught, balls thrown, runners tagged, and so forth. He might even follow the player into the locker room and interview him about his health, past experiences, worries,

and goals and aspirations. That is what we have done traditionally with disturbed children. But what are the chances that our English friend will ever come to truly appreciate and understand the game of baseball and its relation to the first baseman? What are our chances of truly appreciating and understanding the game of life in which the child is engaged and its relation to his or her problems? Why not put down the field glasses and blot out the first baseman initially? Why not focus on the game itself, on all the players, the fans, the officials, the hot dog vendors, and the scoreboard? Why not first look at the plays and players in the child's game, setting the child aside for the moment?

Once a baseball game has been studied ecologically, the Englishman is in an excellent position to focus on the first baseman and really to know his role and appreciate his talents. The first baseman "fits." He is an integral part of a complex network of interdependencies which, when working, produce winning ball games. The same is true for the disturbed child. Emotional disturbance is basically the result of a game gone sour. The players are not playing very well. Some do not know what to do. A hot dog vendor may be at bat, and the umpire may be in the stands selling peanuts. One does not win games that way. Disturbed children lose for the same reasons. Ecological assessments done in some Project Re-ED settings have involved assembling the key players in the child's game (e.g., parents, teachers, relatives) for a group discussion of why the child is losing and what can be done to increase chances for success.

I believe that the 1980s will see the field of special education jell as a discipline. Finally we have a pool of strong leaders whose roots are in special education rather than in medicine or psychology. Although we will always represent a multidisciplinary amalgamation because of the special needs of exceptional individuals, it is time that we made strides toward unity among ourselves. The ecological strategy has been around for quite a while. It makes no judgment as to who is most important among members of the various disciplines. It resists biases and narrowness of focus. It invites us to do what we have always done but to do these things from an ecological point of view. No one loses anything. What we gain is unity and an opportunity for developing a uniquely *special education* approach for helping disturbed children over the decade.

Frank M. Hewett, Professor, University of California, Los Angeles, Los Angeles, California

Academic Skill Development: The Promise of Modeling Strategies with Behavior Disordered Children

Robert A. Gable
and Jo Mary Hendrickson

The bulk of literature on behavior disordered children supports the contention that these youngsters not only exhibit a wide range of behavior problems, but also evidence poor academic performance (Bower, 1969; Gable & Kerr, 1980; Kauffman, 1977). In recent years there has been a shift in the focus of research from overall "treatment" of children with behavior problems (Hobbs, 1966; Long, Morse, & Newman, 1971) to the management of inappropriate or maladaptive behavior (Fagen, Long, & Stevens, 1975; Hall, Panyon, Rabon, & Broden, 1968; Haring & Phillips, 1962; Hewett, 1968; Kauffman, 1977; Lovitt, 1977). Currently, investigators such as Rieth, Posgrove, Raia, Patterson, and Bachman (1977) have cautioned that ameliorating behavior problems does not in itself necessarily lead to improved academic functioning. Indeed, there are those who suggest that emphasis placed on modifying inappropriate classroom behavior may be at the expense of academic achievement (Winett & Winkler, 1972). The purpose of this selected review and evaluation of modeling tactics is to present a case for the instructional merit and advantages of immediate and direct intervention on the *learning* problems of behavior disordered children vis-à-vis such strategies.

Modeling as an instructional tactic

An extensive body of research supports the fact that manipulation of events that immediately follow pupil responses (e.g., praise, smiles, criticism, ignoring) is a highly effective means of modifying student performance. The importance of systematic delivery of consequent events during instruction is well-recognized by practitioners and researchers. However, concentration on contingency management of subsequent events *per se* has failed to resolve many of the instructional problems confronting classroom teachers (Lovitt, 1977). Such tactics are not always likely to modify critical behaviors in the most efficient manner (e.g., gaining a correct response by reinforcing successive approximations can be time-consuming and fairly tedious), nor are reinforcers likely to be naturally forthcoming and support newly acquired skills (e.g., praise or payment for appropriate social or work-related behavior is generally delayed and often seems non-contingent).

In the most general sense, learning occurs through modeling when an individual exhibits a particular response as a consequence of previously observing a "model" demonstrate that behavior (Hendrickson & Gable, Note 3). Investigators have noted that a variety of modeling procedures used singly or in combination with other instructional tactics (Kauffman, 1977; Lahey & Kazdin, 1977) can positively influence pupil performance. Extensive investigations have centered on the use of modeling techniques to modify social behavior (Bandura, 1976; Goodwin & Mahoney, 1975; Kirkland & Thelan, 1977). However, researchers have demonstrated that many academic behaviors also are susceptible to change following instruction of modeling procedures. Lovitt (1977), for instance, combined demonstration with a permanent model to teach arithmetic skills to school-aged children with learning deficits; Stowitschek and Armstrong-laceno (1977) effectively used a questioning plus modeling tactic to teach computational skills. Jobes (1975) utilized a simple imitation training procedure whereby the correct spelling of each word was provided by the teacher before the child was given an opportunity to respond. Target students and observer students evidenced gains in their spelling performance. Whereas Kauffman, Hallahan, Haas, Brame, and Boren (1978) successfully taught spelling by imitating children's erred responses and then presented a model of the correctly spelled word.

Stowitschek and Stowitschek (1978) discussed a remedial handwriting program developed by Hofmeister which included the use of "model" letters and worksheet exercises as the primary instructional tactics. The teacher might or might not be present while the child responded, and a simple adaptation for young or moderately to severely impaired students could include execution of a "model" letter in the presence of the learner.

Hendrickson and Hester (Note 4) and Hester and Hendrickson (1977) employed modeling strategies to promote the acquisition of expressive language responses in developmentally and behaviorally disordered children. Parents and normally developing peers, persons likely to maintain the attention of the subjects, served as models. Hendrickson, Roberts, and Shores (1978) employed an antecedent and contingent modeling procedure to teach an initial sight vocabulary to learning disabled children. They found that when a correct model was presented prior to children's responding, a more efficient learning occurred than if the model was presented in a corrective fashion after a reading error had been made. Shores and Stowitschek (1976) reported a series of studies using a similar modeling tactic to teach school-aged behavior disordered youngsters basic reading and arithmetic skills. Their results indicated that the same easy-to-use modeling tactic can be employed successfully across academic behaviors.

Viewed together these studies served to underscore the degree of which modeling strategies increasingly have become viewed as viable instructional alternatives by researchers. Unfortunately, too little effort has been given to fully explicating and communicating the value and "how to" of modeling procedures so as to allow for widespread classroom replication. In the section that follows, modeling tactics which have been used successfully as primary or adjunct teaching methods in the areas of expressive language, arithmetic, spelling, handwriting, and reading are presented. Representative applied studies have been identified, details of their implementation specified, and aspects particu-

larly significant to practitioners discussed. Hopefully, this information will not only help to bridge the gap between research and classroom practice but also afford a clearer understanding of the promise and limitations of modeling strategies in changing the academic forecast for behavior disordered children.

Use of modeling in training expressive language. Modeling and differential reinforcement procedures have been successful for teaching young handicapped children single word responses (Hendrickson & Hester, Note 4), building agent-action-object utterances (Hester & Hendrickson, 1977), and promoting social discourse and interaction among children with relatively rich verbal repertoires (Hendrickson & Freedman, Note 2). In these studies, peers or parents were integral to the modeling procedures, serving as action or language demonstrators. Since children must attend (and imitate) before modeling tactics will be effective (Kirkland & Thelen, 1977), instructional agents that held pre-existing reinforcing properties, i.e., peers and parents, were chosen to serve as models. In addition, these models were selected on the possibility that they might promote incidental learning beyond the experimental settings. Results of the studies supported the contention that 2- to 7-year-old children with varying language and behavioral disabilities can acquire new linguistic behaviors via modeling strategies, and that the behaviors may maintain across time and, to some degree, across settings (Hester & Hendrickson, 1977). In these studies an action event was demonstrated by a peer using common objects and toys (Hester & Hendrickson, 1977), or a known object was presented by a parent (Hendrickson & Hester, Note 4), and the desired response modeled for the child. Correct responding to partial models (if the child did not reply correctly to a full model) was rewarded with praise and tangibles. In each case a limited number of responses was trained to criterion before new responses were introduced.

The students in the study reported by Hendrickson and Freedman (Note 2) were enrolled in a university-based preschool and had substantial language skills; however, a peer model was used to verbally prompt social-linguistic interaction between children with relatively low social skills. Puppets were used to train the peer to initiate and demonstrate appropriate language and social behavior. An adult trainer was present to prompt the tutor during experimental sessions; generalization of peer modeling on target children's social-linguistic behavior was not assessed. Results indicated that a preschool-aged peer could be trained through a puppet model to prompt another child to initiate two kinds of verbal behavior—requests for information and requests for behavior—and that such prompting led to substantial changes in the frequency and kind of social-linguistic behaviors demonstrated by the target children.

Hendrickson and Stowitschek (in press) reported a modeling strategy that was used in combination with a diagnostic questioning sequence to teach linguistic responses of increasingly more complex semantic content and length to developmentally and behaviorally disordered preschoolers. Their results are significant in that of the two sequences investigated Full Model to Open Question and Open Question to Full Model, the strategy that *began* with a Full Model consistently led to more rapid response acquisition and was unanimously viewed by the trainers as the more desirable teaching procedure.

The Open Question to Full Model procedure reported by Hendrickson and Stowitschek (in press) and based on a procedure employed by Stowitschek

and Armstrong-Iaceno (1977) included a series of progressively more restricted question types being asked contingent on an error by the subject. As soon as the subject responded correctly at any level of questioning he was praised and the Open Question was presented a final time. All of the question types might be asked in either sequence depending on when or if the child erred. Questions presented in the Open Question to Full Model sequence followed this order:

(a) Open Question—This type of question (or statement) required the student to produce a response, rather than imitate a model or choose from available alternatives (e.g., "Tell me about this.").
(b) Multiple-Choice Question—This type of question presented alternative responses which included the correct response (e.g., "Is it a cat or is it a cow?").
(c) Restricted-Alternative Question—This type of question eliminated the alternative incorrect response without presenting a complete model (e.g., "It's not a cat.").
(d) Full Model—This was actually not a question but a statement followed by a direct model intended to gain a correct imitative response (e.g., "It's a cow. Tell me about this."). The full model was reduced further, if the subject did not successfully imitate the full model.

Under both sequences the children learned to answer all question types, however the sequence which began with a Full Model led to an average of 83% correct responding on the part of the children as opposed to 49% correct responding during the Open Question to Full Model sequence. Consequently, during the Full Model sequence considerably more praise was being delivered by the trainers, a factor which changed the quality of adult-child interactions, and in turn may account for trainer preference for the Full Model strategy.

Use of modeling in teaching arithmetic. A series of investigations on the influence of demonstration and permanent models on the acquisition of arithmetic skills has been reported by Lovitt (1976, 1978) and Smith and Lovitt (1975). First, a problem type was selected on the basis of a youngster's achieving 0% correct on a series of pretests. Then, during instruction, worksheets consisting of 25 problems were presented. Next, the teacher solved one problem, leading the student verbally and in writing step-by-step through the computational process. Later the student was requested to complete each of the remaining problems. The investigators found that demonstrating the correct calculation procedure on a youngster's worksheet and leaving a permanent model as a referent for the child was superior to simply providing verbal instruction regarding the operations involved. Except as a scheduled intervention, youngsters were not provided feedback regarding their performance and obtained no other reinforcement. Lovitt (1976) concluded that using the total demonstration plus permanent model was more effective than the administration of either tactic alone. It was recommended that the total technique be employed when teaching the four basic arithmetic functions, particularly since only 2-3 minutes of instruction time is required.

Hendrickson (Note 1) reported the use of peer demonstration and feedback as a prime component of a mathematics program (Hendrickson, 1980) aimed at raising the basic skills of remedial students. In this approach, students worked through a previously designed curriculum that is divided into small sets containing limited numbers of response items. For each problem, a peer gave an

instruction and then modeled the correct response for his/her learning partner. The partner then repeated the problem, verbalizing each step in the computational process. Students with similar skills took turns on the items and assisted each other if the lead student (tutor) had difficulty. The teacher provided the model if both partners were unsure. Responses were primarily oral for lower level skills (e.g., numeration) and oral plus written for more advanced skills (e.g., multiplication with regrouping). The teacher administered criterion-referenced checks at the end of learning units to assure that teams were progressing satisfactorily. Preliminary results have indicated that remedial students themselves can be effective peer models with other second- to ninth-grade remedial students.

Use of modeling in spelling instruction. Kauffman et al. (1978) in several spelling-related studies, compared the effectiveness of modeling contingent on child error with an imitation plus modeling procedure in which the erred response was repeated by the teacher before the correct response was modeled. A list of ten spelling words consisting of words misspelled on pretests was compiled. Throughout, youngsters obtained verbal praise for each word correctly spelled.

In the modeling only phase, the teacher engaged in the following instructional sequence: For children's correct responses, a praise statement was delivered (e.g., "That's right."). For each misspelled word the teacher *said*, "Here is the way you wrote the word _____ , and here is the correct way to spell _____ ." Next the student was instructed to spell the word correctly. During the imitation plus modeling sessions, the child was praised for correct responses; whereas, for each word erred, the teacher said, "This is how you spelled _____ " and *wrote* the misspelled word exactly as the child had, saying, "and, this is the correct way to spell _____ ." As before, the student was asked to rewrite the word correctly. Instructional tactics (i.e., modeling only versus imitation plus modeling) were alternated on a weekly basis. Teaching procedures consisted of daily exercises such as writing the word in salt, on the chalkboard, and on paper. In both conditions, each youngster's words were checked individually.

The imitation of errors plus modeling technique was particularly useful for words spelled phonetically. Kauffman and his colleagues (1978) likened their findings to concept learning insofar as the use of "non-instances" (incorrect responses) followed by an "example" (the correct response) is considered crucial to teaching new concepts. Results on this and other investigations relying on modeling techniques disspell the myth that "teachers should never show a child the incorrect way of doing something."

Use of modeling to promote handwriting skills. As in the arithmetic studies reported by Lovitt (1977), Stowitschek and Stowitschek (1979) relied on the use of a permanent model to teach handwriting. In this instance, a series of durable worksheets, each containing a row of model manuscript letters across the top served as the materials for instruction. Youngsters were instructed to duplicate the model in the space provided below each letter. An important aspect of their program was a self-checking procedure. Students were trained to independently diagnose the accuracy with which they imitated the model letter. A series of letter templates corresponding to each worksheet was designed to be inserted under a transparent plastic worksheet cover. Using the appropriate template, children were taught to self-determine the necessity for

further practice on succeeding rows of the worksheet. In more conventional handwriting practice exercises, teachers are required to either correct each row of the worksheet every 15 or 20 seconds or risk a youngster's repeatedly erring in copying letters. As Stowitschek and Stowitschek (1979) pointed out, by combining student self-checks with an intermittent teacher survey of pupil progress "the student is saved from the drudgery of copying endless rows of letters that he can already form correctly, and the teacher can distribute his time more equitably" (p. 207).

Use of modeling in teaching reading. In another modeling study, conducted by Hendrickson et al. (1978), an antecedent and a contingent modeling strategy were used to teach initial sight words. During antecedent modeling, a model was introduced prior to the youngster's responding. The teacher presented the word card and said, "This word is _____ . What is this word?" During the contingent modeling condition, the teacher presented a word card and said, "What is this word?" A model was administered only when the child miscalled a word (e.g., "No, this word is _____ ."). In both conditions the question, "What is this word?", was repeated until three consecutive corrects were obtained. Praise was given after each correct response in each condition. While both strategies proved effective, the antecedent modeling strategy was shown to be more beneficial for several reasons. First, it was found that fewer teaching sessions were required for children to reach criterion under antecedent modeling. Second, youngsters evidenced significantly fewer errors during training in the antecedent modeling condition, a factor that made teaching itself generally more pleasant for adult and child.

Discussion

The use of modeling tactics is gaining support as an effective intervention for improving preacademic and academic skills of children with learning and behavior problems. Research has shown that modeling procedures, often with minimal instructional time, can be employed to teach youngsters to respond discriminatively to a wide range of stimulus events. While modeling may be an effective technique for eliciting complex social behaviors (Kirkland & Thelen, 1977), there is some evidence to suggest that modeling of academic subject matter may be most productively undertaken during the initial stages of instruction when a child is first acquiring a skill (Lovitt, 1977). It is also important to note that "learning by example" is best accomplished when systematic modeling instruction is coupled with reinforcement of desired responses. Hester et al. (1977) and others (Hendrickson et al., 1978; Hendrickson et al., in press) noted a "learning to learn" phenomenon in children trained under modeling conditions that provided models initially in the instructional sequence. These data suggest that antecedent modeling procedures may be particularly efficient with young (i.e., 2- to 7-year-old) children.

It also appears that academic behaviors are more efficiently learned when correct responses are clearly distinguishable from incorrect responses; and, when they are consequated so as to make correctness or incorrectness apparent to the learner. Furthermore, it is critical for correct responses to be easily distinguishable from incorrect responses when peers or paraprofessionals are serving as teachers so that these people can deliver praise (or punishment or

corrective procedures) efficiently and appropriately. When peers or paraprofessionals are used, the content of instruction should be selected so that a simple binary decision can be made (i.e., the response is either correct or incorrect). Similarly, it is particularly effective during response acquisition to immediately and continuously provide positive reinforcement for corrects (Haring, Lovitt, Eaton, & Hansen, 1978), and conversely, ignore or present an unpleasant event following errors.

Shores and Stowitschek (1976) and Hester and Hendrickson (1977) consequated errors by briefly (for three seconds) ignoring the child. Ignoring was accomplished by the teacher turning her/his head away and looking down. Hendrickson et al. (1978) consequated oral reading errors in a somewhat different manner—they simply provided the correct response then proceeded to the next word. In contrast, the more effective of two procedures used by Kauffman et al. (1978) included imitating the child's error exactly, modeling the correct spelling, and then instructing the child to respond again. Although these procedures vary, in each instance, the children's responses were treated consistently and differentially.

As previously suggested the potential qualitative as well as a quantitative dimensions of teaching strategies are important to consider when selecting instructional procedures to use with behavior disordered children. Research indicates that people who are unsure of themselves are more likely to imitate a model than are self-confident people (Walters & Amoroso, 1967) and that if a model is presented immediately after a failure experience, the likelihood of a person's responding is increased (Kanareff & Lanzetta, 1960). Since so many children with behavior problems are characteristically "unsure of themselves" or frustrated daily with failure experiences, it seems that modeling strategies may be particularly relevant to this population. Even more specifically, it follows that strategies such as antecedent modeling which result in the immediate and high-frequency delivery of positive consequences may warrant attention from teachers trying to improve the quality of the teaching-learning process as well as to achieve academic gains.

It should be stressed that the selection of any instructional procedure should correspond directly with the goal of instruction and be chosen with consideration for the student's correct performance level (Gable & Hendrickson, 1979). For some students pretraining procedures for building attending and imitation skills may be necessary. In other instances, where accuracy is no longer the primary concern, it may be that strategies other than modeling would be more desirable (e.g., consequation strategies). With students for whom generalization of learned responses is a constant problem, teachers may want to take special care to increase the probability of generalized responding by employing multiple models (Bandura & Menlove, 1968) and *in vivo* training across teachers (models) and settings (Stokes, Baer, & Jackson, 1974). On the other hand, students with relatively sophisticated intellectual development (e.g., junior and senior high school students) may respond well to covert modeling approaches and the use of imagery training (e.g., Meichenbaum, 1979). To date, however, there is little data to substantiate the effects of covert modeling on training in the academic areas.

Although further research is necessary to better understand the merits and/or shortcomings of instructional procedures generically referred to as modeling

strategies, there is little doubt but that models have been used successfully to teach behavior disordered children a wide range of academic skills. The available evidence suggests that simple, yet varied, modeling strategies can be used by teachers, peers, and paraprofessionals to the academic benefit of children with mild to severe learning deficits.

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Future Directions in Self-Control Research

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It is well-accepted that the classroom is the appropriate setting for the transmission of academic knowledge. A correlate belief is that if a given student is able to master a specified body of knowledge he/she will succeed academically. One problem with this conceptualization is that it assumes that a student has mastered the "hidden curriculum" before entering the classroom (Chan & Rueda, 1979). This might include staying in one's seat for prolonged periods, following adult directions, etc. An additional problem is that recent evidence (Mehan, 1979) suggests that mastering academic content is not sufficient to succeeding academically. Rather, a student must be socially competent to be able to demonstrate or transmit that knowledge to an adult (teacher) and thereby receive a positive evaluation. It is apparent that a large number of exceptional children have not mastered the hidden curriculum and oftentimes are not competent to demonstrate what they do know in a socially acceptable fashion.

There are several terms which might encompass the aforementioned types of behaviors. These might include, but not be limited to, adaptive behavior, social competence, social skills, and interpersonal competence (Anderson & Messick, 1974; Greenspan, 1979; O'Malley, 1977; Simeonsson, 1978). Regardless of the terminology favored, the attempt to transmit such knowledge is a major component of the curriculum for many exceptional learners.

Improving "student-like" skills in exceptional students

Although there are many theoretical approaches to increasing or decreasing certain types of behaviors, the most influential have been strategies derived from an applied behavior analysis perspective (see, for example, Lovaas & Bucher, 1974). The procedures derived from this perspective have proven invaluable to practitioners charged with remediating maladaptive social behaviors. The majority of behavior analysis interventions have tended to include the use of external control agents, the manipulation of specific environmental antecedents and/or consequences, and careful quantification of resulting changes in target behaviors (Thompson & Grabowski, 1972).

One problem which has plagued those practitioners who operate from a behavioral perspective is the often-noted failure to produce durable and generalizable changes in behavior (Wahler, Berland, & Coe, 1979). In addition, the use of external control agents seems diametrically opposed to fostering independent behavior and is therefore undesirable to many.

Self-control techniques

More recently, the literature on cognitive behavior modification (CBM) or self-control research has increased greatly, at least partly in response to these previously mentioned shortcomings. As Lloyd (1980) points out, CBM is usually composed of the following characteristics. First, subjects themselves, rather than external agents, are the primary change agents. Second, verbalization (often at first overt and later covert) is a primary component. Third, subjects are often taught to identify and use a series of steps (a strategy) to solve a problem. Fourth, modeling has often been used as an instructional procedure. Finally, a great deal of the CBM literature is focused on assisting students in adopting a reflective, as opposed to an impulsive, style.

It should be noted that not all self-control studies have all (or even most) of the aforementioned characteristics. In fact, some authors (e.g., Polsgrove, 1979) distinguish between self-management (manipulating internal and external behavioral consequences) and cognitive methods (manipulating covert antecedent events). However, there tends to be considerable overlap of the various procedures. (For a review of self-control and CBM literature, consult Lloyd, 1980; Mahoney, 1974; Mahoney & Thoresen, 1974; McLaughlin, 1976; Polsgrave, 1979; Schwartz & Shapiro, 1975).

Self-control conceptualized

Several authors have provided perspectives on current problems facing self-control investigators from both applied and basic research points of view (Jeffery, 1974; Jones, Nelson, & Kazdin, 1977; Mahoney, 1972; McLaughlin, 1976.) It is clear that self-control research is in its infancy and many unanswered questions and issues remain. One of the most intriguing questions concerns the nature of what it is that we are trying to train or change through self-control procedures. An admittedly arbitrary breakdown of the separate facets of self-control will assist in clarifying the nature of this question. The three facets include the acquisition of self-control, the content of self-control training, and the eventual desired outcomes.

Studies suggest that there are a variety of ways that children have been trained to acquire and exhibit self-control responses. Primarily, these have included the use of external operant methods such as social and tangible reinforcement (Felixbroad & O'Leary, 1973; Uhlman & Shook, 1976); didactic training methods (Russell & Thoresen, 1976); and observational learning (Aronfreed, 1968; Bandura, 1969).

The content of self-control training has been conceptualized by Kanfer and Karoly (1972) and Kanfer (1975). Basically it is thought to consist of self-monitoring, self-evaluation, and self-reinforcement. (See Polsgrove, 1979, for a review of studies in these areas.) Typically, subjects are instructed to engage in one or some combination of these activities, through the use of one or more of the previously mentioned training methods. Oftentimes, overt and/or covert self-verbalization or self-instruction is also included (Meichenbaum & Cameron, 1974). In general, the focus of these self-management methods is a single behavior or class of behaviors (e.g., Bolstad & Johnson, 1972; Broden, Hall,

& Mitts, 1971; Meichenbaum & Goodman, 1971). However, other investigators have focused on training more general problem-solving strategies that can be used across various situations (D'Zurilla & Goldfried, 1973; Spivack, Platt, & Shure, 1976).

Not surprisingly, the eventual goal of self-control methods is almost identical to the goal of more externally-based operant methods; namely, changes in desirable, overt behavior. The primary difference is that with more internally-based methods, the hope is that behaviors will become increasingly generalizable and durable, and that the subject will have achieved a greater degree of independence.

Although self-control procedures appear promising, especially in relation to exceptional children, the question of what to train remains unanswered. That is, is it preferable to focus on a single behavior or class of behaviors, or to train more general problem-solving strategies? Some possible clues can be found in the distinct but very relevant literature on cognitive research.

Cognitive factors in self-control

Cognitive researchers have begun to pay increased attention to metacognitive development. In general terms, metacognitive development refers to the acquisition of knowledge and cognition about cognitive development, or "knowledge concerning one's own cognitive processes and products" (Flavell, 1976).

The focus of metacognitive research up to this point has been primarily on memory (Brown, 1975; Campione & Brown, 1977; Flavell & Wellman, 1976). However, it has been hypothesized (Flavell, 1979) that metacognition plays an important part in such diverse areas as oral communication of information, oral persuasion, oral comprehension, reading comprehension, writing, language acquisition, attention, problem solving, social cognition, and various types of self-control and self-instruction.

Recent work in the area of cognitive behavior modification has begun to capitalize on the commonalities of cognitive and self-control researchers (see, for example, Meichenbaum & Asarnow, 1979). Interestingly enough, the same processes that are hypothesized to lead to the generalization and maintenance of behavior change have been identified through these two seemingly diverse areas of investigation. These include self-awareness, the deautomatization of behavior routines, and the role of strategic problem-solving processes (Belmont & Butterfield, 1977; Borokowski & Cavanaugh, 1978; Campione & Brown, 1977; Meichenbaum, 1977). The metacognitive activities (meta-strategies), which are applicable in a wide range of situations, are comprised of estimating task difficulty, self-interrogating, self-testing, monitoring the use of a strategy, adjusting the strategy to task demands, and incorporating implicit feedback (Meichenbaum & Asarnow, 1979).

This developing body of knowledge at least suggests an answer in terms of what should be the proper focus of self-control methods. At a theoretical level, those attempts to intervene at the executive or meta-problem-solving level (Meichenbaum, 1978), as opposed to the task-specific or behavior-specific level, seem to be headed in the most promising direction. Interventions at this

level begin to address the limitations inherent in failing to account for contextual/situational variance in task demands, either in the academic or inter-personal domain.

If it is true, as suggested here and elsewhere (Flavell, Note 1; Note 2; Note 3), that there is a commonality of strategic problem-solving activity in such diverse areas as memory, interpersonal relations, and academic tasks, the prospects for intervention are optimistic. For example, it might be hypothesized that successful intervention might affect several domains, rather than a single domain, of activity.

Future directions

The merger of the cognitive and behaviorally-based self-control intervention approaches, although at an early stage, appears promising. Nevertheless, there are many unanswered questions. What is the developmental acquisition of metacognitive development in exceptional children? What is the nature of individual differences in exceptional children along this dimension? What are the most effective means of training exceptional children to engage in these "higher order" cognitive activities? For the present, these and other questions remain unanswered. In all likelihood, the same multidisciplinary framework which has led to the development of these questions will need to be pursued to begin to provide preliminary answers.

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Allocating Opportunity to Learn as a Basis for Academic Remediation: A Developing Model for Teaching

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ABSTRACT

The purpose of this paper is to describe a model for allocating academic instruction to achieve specific academic performance targets within planned time periods in the school year. Only rarely have academic interventions been evaluated on the power of their effects, specifically in terms of achievement gain and the time required to produce that gain. Based upon the observation that allocated time, academic learning time, and the opportunity to respond are correlates of academic achievement, an assessment model can be described. The model's purpose is to functionally interrelate opportunity to learn, teaching time, and achievement. In this paper, the model is described and used to explain differences in achievement due to different allocations in the opportunity to learn. In future applications, the model could be used to determine the time required to reach specific academic goals and the academic gains to be expected from varying amounts of opportunity to learn allocations. Research on the potential use and validation of the model are discussed.

Recent literature dealing with academic achievement and teaching effectiveness has supported the idea that achievement is a function of both the opportunity to learn (Reith, Polsgrove, & Semmel, 1979; Rosenshine & Berliner, 1978), and the time required to learn (Bloom, 1974; Carroll, 1966; Gettinger & White, 1979). These variables have been operationalized on several dimensions as they apply to instruction. These dimensions are (a) the allocation of instructional time to an academic subject area (Harneschfeger & Wiley, 1978); (b) the amount of instruction time the student is engaged in academic learning time (Berliner & Rosenshine, Note 1; Rosenshine & Berliner, 1978); (c) the rate of correct academic responding during instruction (Hall, Delquadri, & Harris, Note 2; Delquadri, Greenwood, & Hall, Note 3); and (d) the rate of content coverage (Borg, 1979; Rosenshine & Berliner, 1978). These four areas appear to be process measures of instruction related to teaching effectiveness, student academic behavior, and academic achievement (Greenwood, Delquadri, Stanley, Terry, & Hall, Note 4). In contrast to other indices of teaching, for example, learning objectives, programming of instruction, and response accuracy, which are all indices of single lessons, opportunity to learn variables are consolidated to yield information on the effects of teaching over longer periods of time (e.g., weeks or months). All four concepts can be monitored systematically, and

systems can be developed to increase their occurrence and effect on learning. However, only a few studies have actually attempted experimental analysis of the effects of these variables (Berliner, Note 5; Delquadri, Greenwood, Stretton, & Hall, Note 6; Reith, Polsgrove, Semmel, & Cohen, Note 7).

Time allocation is a process of both scheduling and following through with the delivery of lessons on a regular daily basis (Reith et al., Note 7). Academic learning time is a process of both instructional and behavioral management to accelerate the time students spend engaged in academic tasks. Opportunity to respond implies a focus on academic intervention, by increasing the response requirements for students, to increase their rate and topography of correct academic responding during instruction. Content coverage implies pacing of instruction both within and across lssons to insure that new materials are presented as soon as mastery of prior material (objectives) has been demonstrated. The greater each of these variables with respect to a subject area, the greater the achievement in that area (Filby, Note 8; Marliave, Note 9).

In contrast, the time required to learn or the trials to learn, as described by Bloom (1974) and recently by Gettinger and White (1979), is a measure of teaching time required for a student to master a unit of material to a criterion level of performance. Thus, it is widely accepted that each child learns at an individual rate. For each child, confronting each lesson, differences exist in the time required to learn. Gettinger and White (1979) report ratios ranging from 3:1 to 13:1 with respect to time to master 1 unit of material. They reported that time to learn measures correlated .85–.89 with criterion referenced measures of achievement in fourth- through sixth-grade students. These correlations were higher than those between IQ and achievement in Gettinger and White's study. This finding lends additional significance to the management of the opportunity to learn.

Not too surprisingly, however, the literature points to wide classroom-to-classroom variation in the occurrence of opportunity to learn variables. For example, Harneschfeger and Wiley (1978) determined that some classes in an urban school district received 69 days more instruction per year than other classes in the same district. Greenwood et al. (Note 4) reported that Title I fourth graders in two schools received the equivalent of 33 school days less per year than a comparable non-Title I group. Similar findings have been reported for low achievers in regular education programs and for special education students in special education programs (Hall et al., Note 2). These results demonstrate that the opportunity to learn is not a concept widely understood or practiced by teachers, and it is a variable very likely not under effective control in most educational settings.

Criticisms of opportunity to learn concepts have not been directed toward the basic idea as frequently as they have at the question of how much opportunity is required to achieve what specific outcomes (Carnine & Silbert, 1979; Reith et al., Note 7). In many respects this criticism can be traced to the lack of research directed at this problem, relating the allocation of opportunity to learn on a daily basis to the number of school days required to achieve a specific achievement goal. A technology of teaching is possible only when the outcomes of teaching can be related to the time required to obtain them. This affects academic program planning for all students and, as described by Carroll (1963) and Bloom (1974), very likely effects the ultimate academic development of any

particular individual. In some behavioral programs (Greenwood, Hops, Walker, Guild, Stokes, Young, Keleman, & Willardson, 1979; Hops, Walker, Fleischman, Nagoshi, Omura, Skindrud, & Taylor, 1978) this goal has been reached. Behavioral effects can be expected reliably in 25–45 school days with program-specific allocation occurring on each day. This time dimension allows planning and selection of appropriate, effective services for the individual needs of children and teacher.

The objective of this paper is based upon Bloom's (1974) mastery learning model. It describes a model for allocating opportunity to learn in a manner in which specific achievement goals might be reached within specific time frames. The model will be described, the intercorrelation between specific measures will be reported, the ability of these measures to predict achievement will be assessed, and the model will be used to describe achievement differences in data collected for 93 children.

THE MODEL

Both Carroll (1963) and Bloom (1974) have described models of instruction that involve (a) the time needed to learn under mastery learning conditions, and (b) the time actually spent learning. The result is the actual achievement level obtained. The problem with the model to date has involved both assessment of student time required to learn and observational assessment of academic learning time allocations. This model, under study at the Juniper Gardens Children's Project School Research Unit, is based upon three principal variables. These are (a) the time available to learn, (b) the allocations of opportunity to learn on a daily basis (i.e., allotted time, academic learning time, etc.), and (c) measures of academic achievement. The basic assumption is that interventions designed to increase the opportunity to learn, in comparison to baseline teaching procedures, will speed achivement. More will be learned, faster (Becker, 1978). Figure 1 summarizes the model in terms of these dimensions, and it implies that teaching will be evaluated in terms of both achievement outcome and the number of days required to achieve this effect.

Full validation of this model will provide a number of benefits, ranging from selection of teaching interventions to the monitoring of individual subject performance under specific teaching methods. The ultimate benefit of the system would be to accelerate remediation of academic deficits in delayed children, efficiently within the fixed amount of school time allotted.

METHOD

Subjects

Ninety-three 4th grade students were randomly selected from four schools in the Kansas City, Kansas School District. Schools differed on socioeconomic variables. Two were Title I inner-city schools; two were non-Title I suburban schools (Greenwood et al., Note 4).

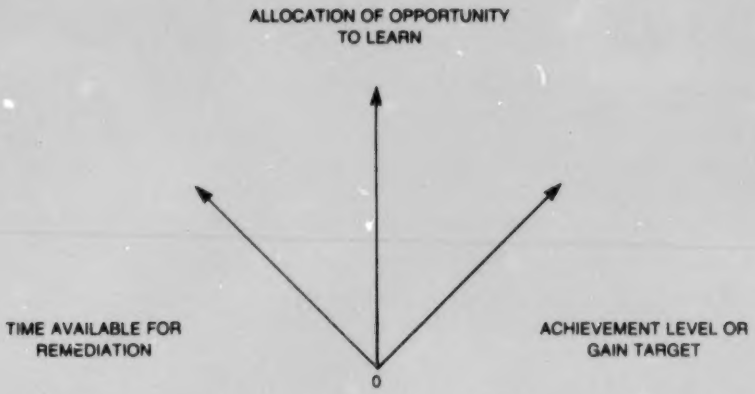

FIGURE 1
Academic achievement as a function of time available for remidiation and the allocation of opportunity to learn at school.

Ability, Achievement, and Mastery Measures

Three outcome measures were used. These included IQ, standard achievement tests, and mastery learning tasks.

Intelligence Quotient. The Slosson Intelligence Test (SIT) for children and adults was used to assess general ability (Slosson, 1963).

Standard Achievement. Reading achievement was assessed using the Gates-MacGinitie Reading Tests—Level B and D (MacGinitie, 1978). The test yields vocabulary, comprehension, and total reading scores. Mathematics achievement was assessed using the Wide Range Achievement Math Test—Level I (Jastak, Bijou, & Jastak, 1978).

Mastery Learning Tasks. Two mastery learning tasks were developed to assess time to learn in reading and math (i.e., the trials required to learn correct responses in reading and math). In each case, task procedures were designed to first determine a basal level. Teaching trials were then administered for 10 unknown items. In this fashion, the number of trials and correction trials were used to assess learning speed.

Classroom Observation Measures

The Code for Instructional Structure and Student Academic Response (CISSAR) was used to assess six categories of classroom ecology and student responding (Greenwood, Delquadri, & Hall, Note 10; Stanley & Greenwood, Note 11). These categories included (a) activities—the subject of instruction (12 codes), (b) curriculum task types (8 codes), (c) structure—grouping (3 codes), (d) teacher position with respect to the target student (6 codes),

(e) teacher behaviors (5 codes), and (f) student behavior (19 codes). For specific definitions, see Stanley et al., Note 11.

Observer Selection and Training. Observer trainees learned to use the CISSAR system in a 3-week workshop, 4 hours each day, and 1 additional week coding practice in the public school. Early training focused on learning definitions. As mastery exams on definitions were passed, observers were taught to use CISSAR coding forms and practiced coding role-played classroom events and video-taped sequences of classroom teaching. Once observers produced three usable coding segments (above 80% agreement), coding was done in the public schools. At the end of the first week in the public schools, all observers had obtained 80% or better reliability and were permitted to collect data for the study.

School Observation. Trained observers were organized into two teams for conducting entire-day observations of target students. Each team consisted of five observers. The first team conducted morning observations for designated students; the second team conducted afternoon observations. In this fashion, all-day recordings of students' behavior were accomplished without overtiring observers. Observers rarely were required to code continuously for over 1 hour at a time due to planned and natural breaks occurring within the school day (recess, lunch, P.E., etc.).

When students left the classroom, observations ceased. If a student moved to an academic station outside of the regular classroom (e.g., to another classroom, study center, resource room, etc.), observers moved with the student and resumed observations in the new setting. Observations were not carried out during non-academic activities outside of the regular classroom (e.g., during recess, P.E., etc.). However, since observers recorded the time at which a child's participation in these events began, the total proportion of the school day during which academic instruction occurred could be defined. Direct observation was done during all academic instruction time.

Interobserver Agreement. Agreement checks between observers were conducted an average of 17 per week during the study. Two observers observed the same student for a standard 14-minute check. The percentage agreement method was used to compute agreements, (e.g., number of agreements divided by agreements plus disagreements times 100). Agreement scores were computed separately for the six major code areas (e.g., activities, tasks, etc., and overall). They averaged 99% (SD = 4.17) for activities, 97% (SD = 7.46) for tasks, 99% (SD = 2.85) for structures, 94% (SD = 8.00) for teacher positions, 92% (SD = 8.67) for teacher behaviors, and 86% (SD = 11.70) for student behaviors. The overall agreement average was 92% (SD = 6.32) and ranged from 70% to 100%.

Stability of Observations. In a preliminary study reporting the development of the CISSAR code (Delquadri et al., Note 3), the number of coded days required to adequately estimate scores representative of a 1-month period was evaluated. Since the majority of observational data is graphed by sessions or days, stability is usually assessed visually. However, when observation data are used as average scores over time periods, some study of the amount of data required to form stable scores is required. Twelve children were observed for 4 complete days, each on random days, once each week for 4 weeks. It was found that

for activities, the correlation between 1 day and the 4-day (1-month) composite was $r = .76$ (range = .50–.95). One day predicted 62% of the variance in the 1-month estimate. Equivalent values for student behavior were $r = .90$ (range .92–1.00), with 92% of the variance in the 1-month estimate predicted. Thus, it was clear that a 1-day sample of a student's program and behavior was highly predictive of a 1-month sample.

Procedures

Testing and observation were conducted in a counterbalanced design to control for time of measurement across Title I and non-Title I schools and to minimize the intrusiveness of measurement in each school. While observations were made in School 1, a Title I school, testing was completed in School 3, a non-Title I school. After 2½ weeks, teams switched schools. Observations were now completed in School 3 concurrently with testing in School 1. This pattern next began in Schools 2 and 4. As was done previously, teams switched schools 2½ weeks after completing their assessments. Assessment was in effect from February through mid-April, 1980.

RESULTS

The first analysis concerned the relationships between IQ, achievement, and time measures (i.e., time to learn, academic learning time, and allotted time). These results are presented in Table 1. As would be expected, IQ correlated highly with both reading and math standard achievement scores: .76 and .69, respectively. IQ was also a correlate of academic learning time (.22), but was not related to allotted time in either math or reading. Reading achievement was related to time to learn in reading (−.53), and academic learning time (.33). Math achievement related to time to learn (−.34), and academic learning time (.21). Allotted time was not a significant correlate of either reading or math achievement.

A second set of analyses was designed to replicate features of Gettinger and White (1979) and McKinney, Mason, Perkerson, and Clifford (1975). Both of these studies reported that time to learn and academic learning time variables were unique contributors to the prediction of achievement. Using multiple regression, time to learn, academic learning time, allotted time, and task time, variables were combined to predict achievement. This was done for reading and math achievement along with two additional analyses that included IQ in the prediction (See Table 2). In reading, the linear combination of time to learn, academic learning time, allotted time, and reading task time accounted for 34% of the variance in reading achievement. Similar variables predicted 15% of the variance in math achievement. When IQ was included in each analysis, the total variance accounted for was 64% in reading, and 52% in math achievement.

It was noted that, in reading, both time to learn and academic learning time resulted in significant regression weights, while allotted time and reading task time did not. In math, time to learn replicated in the equation without IQ. In the

TABLE 1

Correlation Matrix for IQ, Achievement, and Time Measures

	IQ	Rach	Mach	Rttl	Mttl	Alt	Rat	Mat
IQ	—							
Rach	.76**	—						
Mach	.69**	.66**	—					
Rttl	−.45**	−.53**	−.39**	—				
Mttl	−.33**	−.18	−.34**	.14	—			
Alt	.22*	.33**	.21*	−.19	−.22*	—		
Rat	−.06	.01	.00	−.06	−.01	.15	—	
Mat	−.08	−.03	.10	−.03	.06	.05	−.02	—

*p> .05
**p> .01

IQ = Intelligence Quotient
Rach = Reading Achievement Standard Score
Mach = Math Achievement Standard Score
Rttl = Reading time to learn (Opportunity per item mastered)
Mttl = Math time to learn
Alt = Academic learning time
Rat = Reading allotted time
Mat = Math allotted time

IQ equation, both IQ and time allocated to math instruction yielded significant weights.

Thus, it appeared that information concerning time to learn, academic learning time, and allotted time (in math only) were significant correlates of achievement, replicating Gettinger & White (1979). Moreover, this information added uniquely to the achievement variance predicted, replicating McKinney et al. (1975).

The final analysis was an attempt to apply the learning time model to examine and explain achievement differences and the lack of differences in two student groups, one Title I, and one non-Title I. These results are summarized in Figure 2. In reading, there was a 1-year grade difference between groups on achievement: 3.43 vs. 4.43, $F(1,89) = 7.87, p = .01$), time to learn in reading; 48 opportunities vs. 27 opportunities, $F(1,89) = 8.14, p = .01$, and academic learning time spent reading silently; 12 min/day vs. 20 min/day, $F(1,89) = 7.47$, $p = .008$. There was no difference in the average amount of time allotted to reading instruction, 60 min/day vs. 54 min/day. The upper panel in Figure 2 portrays this relationship within the framework of (a) cumulative time in school, (b) the allocation of teaching (ratio of time to learn to academic learning time), and (c) achievement. A ratio expressing trials to learn over silent reading time in reading formed the allocation of teaching dimension. As noted in the figure, the large disparity in teaching allocation was correlated to the 1-year disparity in reading achievement.

In math, a similar analysis was completed (See lower panel of Figure 2). In this

TABLE 2
Multiple Regression Results

Reading Achievement

Time Allocation Variables				IQ + Time Allocation Variables			
R	R^2	F	P	R	R^2	F	P
.58	.34	11.39	.001	.80	.64	31.08	.001
Variable P		T	P	Variable		T	P
Rttl		5.52*	.001	IQ		8.53*	.001
Alt		2.58*	.012	Rttl		2.97*	.004
At		0.73	.446	Alt		2.08*	.040
Readers Time		0.87	.843	At		0.21	.835
				Readers Time		0.45	.656

Mathematics Achievement

Time Allocation Variables				IQ + Time Allocation Variables			
R	R^2	F	P	R	R^2	F	P
.39	.15	3.95	.005	.72	.51	18.28	.001
Variable		T	P	Variable		T	P
Mttl		3.21*	.002	IQ		8.02*	.001
Alt		1.09	.280	Mttl		1.63	.106
Mat		1.15	.256	Alt		0.31	.756
Paper & Pencil		0.86	.852	Mat		2.11*	.038
Time				Paper & Pencil Time		0.99	.921

* significant at .05 and beyond

case, since there was no group difference in academic learning time but a difference in time allotted to math instruction; $F(1,89) = 15.60, p = .001$, the allocation ratio was formed using time to learn over allotted time. In Math, these ratios were equal for both groups at 7.34 and 7.92. Title I teachers allocated 20 minutes more instruction to math per day than non-Title I teachers. Since Title I students required ⅓ more teaching time to learn on the average than non-Title I; 9.00 vs. 6.00 trials per item mastered, teaching allocations were equal for both groups. As noted in the figure, at 4 years 6 months of schooling, the two groups were no different in math achievement, 4.02 vs. 4.21 grade equivalents.

DISCUSSION

The purpose of this paper was to describe a model whose goal could be precise allocation of teaching time to achieve remediational targets within reasonable periods of the school year. The model is currently under study at the Juniper Gardens Children's Project, in Kansas City, Kansas. The current focus of this

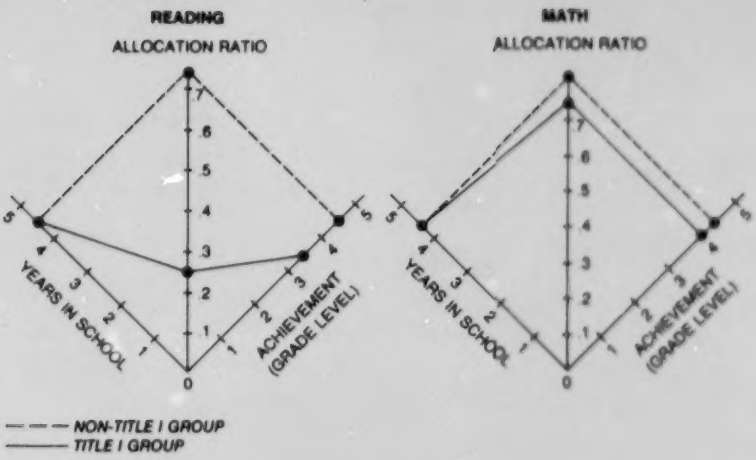

FIGURE 2
Academic achievement as a function of allocation of learning time and years in school.

research is the development of teaching formats that increase the opportunity to learn and respond and thereby effect increases in academic achievement (Hall, et al., Note 2; Delquadri, et al., Note 3).

As previously noted, while the opportunity-to-learn literature has reported positive relationships to achievement, data regarding the amount of opportunity required by a learner, or class to attain gains in achievement, has been lacking (Carnine & Silbert, 1979; Reith, et al., Note 7), primarily due to the lack of research and an appropriate data base. This report was an attempt to replicate prior findings, suggest the appropriate measures, and demonstrate how the model might be used to assess and monitor teaching efforts tied to specific achievement and time goals. In this study the model was used to examine the allocation of opportunity to learn in terms of time required to learn, in two fourth grade groups in four schools. It was noted, consistent with academic learning time principles, that the group with the highest teaching allocation had significantly greater levels of achievement. Conversely, when the teaching ratios were equal because the time required to learn difference between groups had been correctly compensated for by increased allocation of opportunity to learn, there were no achievement differences between groups (i.e., in Math).

These findings, of course, are descriptive and require further experimental validation in order to demonstrate generality. Further development of the model at Juniper Gardens is focusing on the effects of both academic learning time and allotted time interventions over specific remediational periods. In this fashion, not only will specific instructional interventions be developed, but the experimental data-base on the use of the model will be completed. Thus, we hope to develop the model in a form useful to many models of instruction and curriculum, but geared to standard measures of time to learn, academic learning time, and allotted time.

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Footnotes

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Establishing Criteria For Social Behaviors

Kenneth W. Howell

INTRODUCTION AND DEFINITION

The development of functional and appropriate evaluation techniques is essential for any field. These techniques are used to define the variables and delineate the objectives which are used to validate theory and focus intervention. The field of behavior disorders hinges directly on the accurate determination of a disorder and the correct specification of a treatment. The purpose of this review is to summarize the status of evaluative technology in the area of social behavior, as well as to specify areas of concern.

Evaluation procedures often become the operational definition of the thing they are designed to evaluate. This happens most often when the area for which the procedure was developed is ill defined. Validity is difficult to determine when there is uncertainty at the definitional level. Definition is brought up at this point, because a useful review of evaluative technology requires consideration of validity. Unfortunately, social behavior is not a clearly defined topic. This lack of clarity, however, is not the result of a lack of attention to definition (Grosenick & Huntze, 1980). The trouble with defining social behavior can probably be traced to its own complexity and to the same pervasive confusion of classificatory definitions with treatment definitions that marks every other subdivision of special education.

For the purpose of this paper, social behavior is defined as: the set of skills necessary to interact successfully with others across settings. This definition is sufficiently vague to guarantee a long review. However, it does have some key words which deserve elaboration: *skills* may be verbal or non-verbal; *interaction* rules out self-stimulating behaviors and some dimensions of compulsive and/or addictive behavior; *settings* requires recognition of the impact of situation on behavior; and *successfully* implies the existence of a criteria.

A subject may seem disordered from any combination of the following perspectives: society's perspective (adaptive behavior dysfunction); the mental health profession's perspective (theoretical dysfunction); the client's perspective (adjustive dysfunction). In addition, dysfunctions in any of the three catagories listed above may vary in severity (Strupp & Hadley, 1977).

Evaluative procedures which are keyed to the perspectives listed above are used for the purpose of classifying the client's dysfunction. Procedures which are sensitive to the severity of a disorder are more often used to determine treatment. This means that classificatory and intervention instrumentation may differ in style, purpose, and quality. As a rule, evaluators are more apt to agree on the existence of a problem and its magnitude than on the cause of a problem and its definitional characteristics.

Variations in purpose

Different approaches to evaluation may result from different purposes. Those who evaluate for the purpose of classification may evaluate differently than those who evaluate for the purpose of treatment specification. Classificatory procedures match the perspectives outlined earlier. The perspective of society is usually obtained by procedures which sample the views of significant individuals in the client's social context. The mental health profession's theoretical basis is used to formulate projective procedures, and the individual's own views are typically obtained in a structured interview format. As clinicians' orientations move toward a synthesis of the three basic perspectives, they will begin to combine and overlap procedures.

Evaluations which are intended to yield intervention data (as opposed to classificatory data) tend, as a group, to sample "observable" behaviors. This general tendency is probably a function of the intent of treatment, which is to change the status of the client. Because change can not be recognized if it can not be observed, the treatment-oriented evaluator (regardless of perspective) naturally will lean toward procedures which summarize the observable. Given the same alteration in an observed client behavior, two different evaluators will arrive at different conclusions which reflect their own different orientations. However, both evaluators will value a procedure which reliably summarizes the client's status and any changes in that status.

Variations in procedure

Every procedure discovered in a review by the author could be classified a test, an observation, an interview, or a rating scale. In addition, reported data was obtained either from the clients, their families, their peers, or an involved professional. Some procedures were highly structured while others appeared unstructured. Some seemed to be sensitive to the ecological, or interactive nature of social behavior while the majority took a purely client-centered focus. These variations are summarized in Figure 1. Figure 1 incorporates only the type of instrument, its orientation, and its data source. Within each of the generated cubes, variations in structure may also take place.

A structured procedure is one which imposes narrow limitations on the responses of the data source. Such procedures encourage the evaluator to focus on one factor or set of factors. For example, a structured observation procedure may attempt to outline the relationship between one clearly defined client behavior and one clearly defined teacher behavior as in "frequency of physical contact with peer and percent of teacher attention (verbal or physical) to the contact."

An unstructured procedure does not impose a focus on the results. A summary log of observed student behavior (sometimes called "charting" in institutional settings) is an example of an unstructured procedure.

A Review of procedures

The author undertook a non-random review of existing procedures for evaluating social behavior. The 200 procedures reviewed were found in a variety of sources

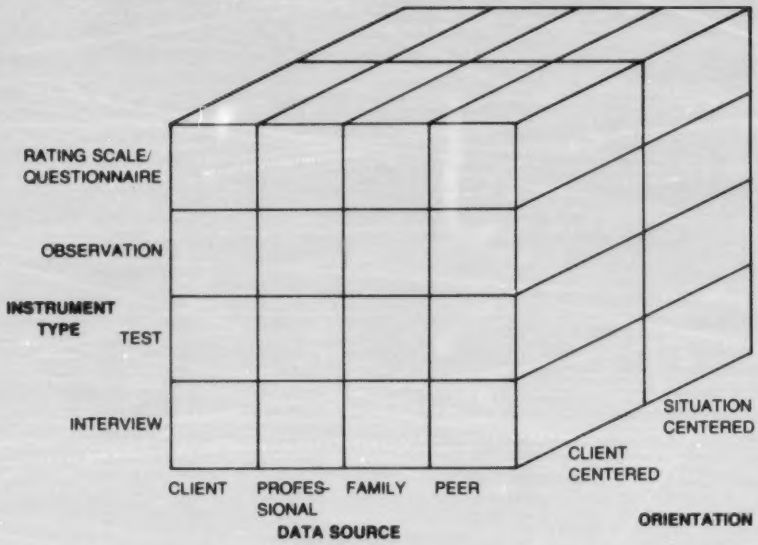

FIGURE 1

Variations in procedures for evaluating social behavior.

including catalogs, test reviews, evaluation texts, and resource references. A procedure was included in the review only if it was possible to determine its name, author(s), publisher, purpose, format, length, and data source. The most frequently occurring procedure was the client-centered rating scale/questionnaire filled out by the client. Seventy-two percent of the procedures fell into the rating scale/questionnaire category while 24% were observational procedures. The remaining 4% of the procedures were tests. No formal standard interview systems were found in the surveyed literature. Some simulated social activities or role playing procedures were found and categorized as observations (2%).

The most frequently targeted data source was the client (64%). Twenty-three percent of the procedures relied on professionals (including teachers), 11% on the family, and only 1% on peers. There were no examples of client self-observation. It is important for the reader to understand that the existence of a technique does not necessarily guarantee its use. Some techniques are easier to develop, therefore, more of them exist. While most existing rating scales are designed to be filled out by the client, in clinical practice the majority probably are filled out by professionals. Only in research with mildly disordered populations are the scales typically filled out by the client.

Rating scales/questionnaire

Behavior rating scales range in structure and scope. They are frequently indistinguishable from the adaptive behavior scales used to make statements about the social competence of clients in relation to mental retardation. These scales may be filled out by teachers, peers, and/or family members. They may take the form of behavior and/or adjective checklists, or they may use the format

of a questionnaire. Rating scales appeared most frequently in the sample of procedures reviewed for this article.

Van Hasselt, Hersen, Whitehill, and Bellack (1979) reviewed both rating scales and questionnaire procedures and recognized certain advantages and disadvantages of each. Questionnaires may have good psychometric properties making them an attractive source for research variables. However, as a group they are not highly correlated with observed social behavior. In addition they are relatively insensitive to change even when behavior change has taken place. Rating scales, while quick and easily quantifiable, also have their problems. The primary disadvantage of rating scales is that they assume the teacher has been observing the subject and doing so from the same perspective as the scale. In addition the teacher's preexisting understanding of and opinion about the headings to be rated are primary determinants of the rating (as is his/her opinion of the client).

The majority of rating scales/questionnaires are organized to reflect either theoretical subdivisions or adaptive behavior subdivisions. Some typical headings under which a student is rated include: home adjustment, school adjustment, cooperation, communicativeness, sexuality, self-confidence, conformity, close-mindedness, and work habits. These categories mean different things to different raters. The client behavior "initiates contact with peer" may indicate cooperation to one teacher and self-confidence to another while indicating sexuality to a third. This sort of confusion within the scale itself is reflected in the overall status of adaptive behavior measures. The use of such measures is widely advocated by practitioners (Coulter & Morrow, 1978). However, in the literature on mental retardation, for example, the scales are seldom used to describe research populations. In fact, in spite of increased discussion of the scales their use in research on the retarded has not increased (Smith & Polloway, 1979).

Behavior rating scales may be filled out by teachers, peers, or the students themselves. The vast majority of them are filled out by parents and/or teachers. However, there is considerable evidence that students are excellent evaluators of their own environments (Kaye, Trickett, & Quinlan, 1976) and that their ratings can be used to make classificatory and diagnostic distinctions among their classmates (Seidman, Linney, Rappaport, Herzberger, Kramer, & Alden, 1979; Weintraub, Prinz, & Neale, 1978).

Peer ratings provide a situation-specific (rather than a client-specific) orientation, however they are seldom used. Self-ratings, while even less common in intervention than peer ratings, seem to be generally regarded as "soft data." This is unusual, considering that clients' perceptions of themselves seem extremely relevent to their social behavior.

Structured observations

The majority of the rating scale/questionnaires currently in circulation tend to take a personological or client-centered approach to assessment; that is, they focus on the characteristics of the individual and attempt to summarize those characteristics which seem stable. If the characteristics are, in fact, unstable,

then the ratings will vary. These reality-induced fluctuations in the scores will appear to lower the reliabilities of the measures. Accurate ratings of situation-specific behaviors (which may be of extreme therapeutic interest) easily could be mistaken for a lack of instrument reliability.

Structured observational systems tend to be more accepting of behavioral fluctuations. This is because their reliability is defined as agreement between contemporary raters recording defined occurrences of behaviors. Rater agreement can remain high even when client behavior is inconsistent across settings.

The theory and practice of behavioral observation have been widely described, although observational systems accounted for only 24% of the procedures reviewed. Most of these systems contain "response catagories" which appear to correspond to the adaptive behavior subdivisions outlined above. These include such categories as compliance, play behavior, proximity, eye contact, and verbalizations. However, as mentioned earlier, observations of behaviors such as "frequency of peer interaction" may not correlate well with ratings in categories such as "social acceptance" (Van Hasselt et al., 1979). As a result, observation procedures tend to yield statements of isolated behavior problems rather than broad areas of concern. This is advantageous for intervention but may be too limited for classification.

The inherently narrow focus of direct observation does not necessarily exclude its use as a classificatory procedure. Forness and Esveldt (1975) found direct observation to be a good predictor of high-risk children, and its use in the identification of learning disabled students is supported by Deno, Mirkin, and Shinn (1979). However, the primary value of observational systems is in the area of intervention. This is particularly true when time-sampling procedures are employed and reliability spot checks are used (Van Hasselt et al., 1979).

Procedural weaknesses

Observational systems and rating scales, along with psychological testing and interview procedures, suffer from a series of common problems. Primary among these is the absence of established validity. In order to establish or even argue for validity, it is necessary to link a procedure to well-defined domains. Social behavior is not well defined. As a result, validation procedures may address a variety of domains such as causation, interpersonal effectiveness, social impact, prognosis, and intervention. Because procedures which seem valid for determining causation may lack validity for intervention, conflicting results are often produced by efforts at validation. The most defensible approach to establishing validity would seem to be a combination of social validation and treatment validation.

Criteria

Evaluation procedures in the area of social behavior have one overpowering weakness: the absence of predetermined criteria. Most procedures summarize the client's behavior but do not provide standards with which these behaviors can be compared. In the absence of specified criteria, the operational standard

becomes the evaluator's intuition. Interestingly, only standardized testing procedures provide any semblance of criteria. These tests, which usually reflect a theoretical perspective, are frequently (and justifiably) maligned for their lack of utility and speculative projections. However the more "behavioral" observations and ratings, which provide an alternative to projective tests, are often nothing more than sophisticated behavior summaries.

No procedures for determining social behavior criteria were discovered in the review. Guidelines for recognizing significant behaviors were vague and ill-defined in all types of instrumentation. The author believes that this problem, along with the infrequent occurrence of situation-centered procedures, is the biggest weakness in the field of social behavior evaluation. Current procedures tell us what the client is doing. Nothing tells us what the client should be doing.

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Educational Setting For the Primary Prevention of Child Abuse and Neglect With School Age Children

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There has been considerable research which has addressed the determinants and consequences different child-rearing and parenting behaviors have upon the developing personality of the child. Although experts have had difficulty agreeing on the specific consequences of parent-child interactions, a majority have supported the theory that early parent-child interactions have a marked influence on the future behavior or the child.

As a result of current societal awareness of the number of children being physically abused by their parents, the role of the parent is being viewed with increasing importance. There is growing clinical evidence which indicates that inadequate and destructive parenting behaviors constitute one of the major causes of child abuse and neglect. Steele (1970) claims that distorted patterns of child-rearing are learned by the parent in the developmental stages of childhood. These learned patterns of behavior often are perpetuated in adult life where the parent who was abused as a child may replicate both the attitudes and behaviors toward parenting and child-rearing practices that were experienced in the process of growing up. The cycle, when repeated, transmits these learned abusive parenting attitudes and child-rearing practices to yet another generation of children (Steele, 1970).

Although there is no available empirical data-based research to support the generational concept that abusive parenting behaviors are replicated by the abused child upon becoming a parent, there is substantial evidence in the literature indicating that certain attitudes, behaviors, and beliefs of the parent are transmitted to the child and remain with the child through adolescence and into adulthood. Freud (1923) postulated that the child selects an adult, usually a parent, as a model and attempts to simulate some segment, large or small, of that model's behavior. This concept of parental identification has been recognized as an important process through which the child internalizes parental characteristics which contribute to the development of the child's personality (Erikson, 1950; Kohlberg, 1964). Bandura (1969) suggested that the child internalizes certain parental characteristics through observational learning and modeling which could determine life-long patterns of behaviors. Fry (1975) found that if a child identifies with the parents, there is a high probability that

s/he will duplicate his/her parent's ideas, attitudes, and behaviors as an adult. Weisbroth (1970) investigated the perpetuation of parental morals and found that among adult subjects, parental morals were perpetuated well into adulthood, and that this perpetuation stemmed from previous identification with parents. Munns (1972) compared the values of adolescents with those of their peers and their parents, and determined that male adolescents saw themselves as similar to their fathers in their philosophical, social, political, and religious values. In a similar study, Sears (1953) concluded that identification with parental values, attitudes, and morals develops at a very early age and is maintained through adulthood.

The research cited above leads to the conclusion that early parent-child interactions play an influential role in subsequent behavior of the child. Additionally, available clinical evidence suggests that a substantial number of abusive parents were themselves abused as children. Thus, there is a high probability that children who are reared in an environment where they continually experience maltreatment at the hands of their caretakers learn abusive parenting behaviors. Upon becoming a parent, the abused child may replicate the abusive parenting and child-rearing practices s/he learned in the process of growing up.

Parenting education has been viewed as perhaps the single most important treatment and intervention variable to offset the generational perpetuation of abusive parenting and child-rearing practices (Lystad, 1975; Spinetta & Rigler, 1972). Parenting education programs, however, must be established within a sound conceptual framework. The objectives of the instruction must be directly related to the target behaviors. Instruction designed to ultimately reduce the perpetuation of abusive parenting and child-rearing practices formulated from the known parenting behaviors of abusive parents could provide such a framework. That is, the known parenting behaviors of abusive parents could serve as the basis from which instruction in appropriate parenting could emanate. Although the literature abounds with information relative to the parenting behaviors of abusive parents, the diversity of the clinical and empirical findings makes any systematic examination of these behaviors incomplete or misleading.

The intent of this article is twofold:

1. To review the empirical and clinical findings relative to the parenting attitudes and child-rearing practices of abusive parents, with the purpose of synthesizing the findings into definable parenting behaviors most commonly associated with abusive parents; and

2. To establish a sound conceptual framework from which parenting education programs can formulate training and instructional strategies designed ultimately to reduce perpetuation of abusive parent-child interactions.

Identification of Abusive Parenting Behaviors

The following parenting constructs represent a systhesis of the clinical and empirical findings relative to what is known about the manner in which abusive parents rear and interact with their children. In developing these constructs,

approximately 300 professional publications were reviewed and nine national agencies were contacted. To insure the accuracy of the parenting constructs, content validation activities were carried out with experts in the fields of child abuse and neglect, child development, and parenting education. The experts were asked to focus on the completeness and validity of the construct descriptions. Results of the content validation activities indicated that the identification of four parenting constructs represented an accurate description of the parenting and child-rearing practices most commonly associated with abusive parents.

Construct A: Inappropriate Parental Expectations of the Child

Beginning very early in the infant's life, abusive parents tend to inaccurately perceive the skills and abilities of their child. Steele and Pollock (1969) found that parents in their study group expected and demanded a great deal from their infants and children, and did so prematurely. Galdston (1965) concurred that abusive parents treated their children as adults, and added that the parents were incapable of understanding the particular stages of their children's development. In these misperceptions, infants are expected to perform in a manner incongruous with what may reasonably be expected at their developmental stage. These inappropriate expectations stem from lack of a knowledge base relative to the capabilities and needs of children at each developmental stage. Treated as if they are older than they really are, children often are left to care for themselves, or to care for younger siblings. Children may be expected to be toilet-trained by 6 to 12 months of age; to be able to talk before 2 years of age; and to help with the washing, house cleaning, food preparation, and serving at a very early age (Martin, 1976).

The effects of inappropriate parental expectations on young children's development are debilitating. Martin (1976) suggests that when these expectations are impossible to meet, biologically and/or cognitively, children perceive themselves as worthless, as failures, and as unacceptable and disappointing to adults.

Construct B: Parental Lack of Empathic Awareness of Child's Needs

A second common parenting trait among abusive parents is their inability to be empathically aware of their children's needs, and to be able to respond to those needs in an appropriate fashion. Melnick and Hurley (1969), in their study of personality variables of abusive parents, found mothers to have severely frustrated dependency needs and an inability to empathize with their children. It has been reported that not only did abusive parents have a high expectation and demand for their infants' or children's performance, but they also had a corresponding disregard for the infants' or children's own needs, limited abilities, and helplessness (Bain, 1963; Gregg, 1968; Hiller, 1969).

Empathic awareness of a child's needs entails a parent's ability to understand the condition or state of mind of the child without actually experiencing the feelings of the child. To empathize as a parent is to participate in the child's feelings and ideas. Abusive parents often demonstrate an inability to be em-

pathically aware of their infant's or child's needs. Based on a fear of "spoiling" their child, abusing parents often ignore their child, which results in the child's basic needs being left unattended (Steele, 1975). A high premium is placed on the child being good, acting right, and learning to be obedient. However, what constitutes "good" behavior seldom is clarified for the child.

The effects of inadequate, non-empathic parental care during the early years of an infant's or child's life may be profound and enduring. Children who are ignored and whose basic needs are neglected may fail to develop a basic sense of trust in self and in others. Children whose parents pay no attention to them, children who are not permitted to make demands on their parents, and whose parents are interested mainly in their children's acting right and learning to be obedient, live in a world which provides little or no basis for learning respect for rules and for being able to distinguish right from wrong. These children fail to develop confidence in themselves and in their basic abilities. Acting their age means being pliable to the demands of their parents, and does not mean testing reality. Violence, cruelty, and causing pain to others are not considered bad by these children. The parent(s) with whom these children identify model violent, cruel, and physically/psychologically abusive behaviors under the aegis of teaching, helping, and controlling children. The results are apparent in these children's tragically low sense of self-esteem and distorted sense of guilt (Steele & Pollock, 1969).

Construct C: Parental Value of Physical Punishment

The third parenting behavior commonly associated with abusive parents is their strong belief in the value of physical punishment. Abusive parents may believe that babies should not be "given in to" nor allowed to "get away with anything." They must periodically be shown "who is boss" and taught to respect authority, so they will not become sassy or stubborn. Wasserman (1967) found that abusive parents not only considered punishment a proper disciplinary measure but strongly defended their right to use physical force.

Physical attacks by abusive parents often are not haphazard, uncontrolled, impulsive discharges of aggression toward the infant. On the contrary, studies appear to indicate that abusive parents utilize physical punishment as a unit of behavior designed to punish and correct specific bad conduct or inadequacy on the part of their children (Davoren, 1975; Steele, 1975). Much of what abusive parents find wrong with their children is the same as that for which they themselves were criticized and punished in childhood, hence the punishment carries the approval of traditional family authority and an aura of righteousness.

The effects that physical abuse has on developing children are demonstrated in subsequent developmental behaviors. Both Curtis (1976) and Steele (1970) describe the tendency of children to identify with an aggressive parent and to pattern their own behavior after that of the parent. According to Steele, children, in an effort to gain some measure of self-protection and mastery, identify very strongly with the aggressor and develop a set pattern of discharging aggression against the outside world in order to manage their own insecurities. Additionally, children who see and experience recurrent serious expressions of violence in their own family learn and believe that violence is a useful way to solve problems.

These children, upon becoming parents, tend to punish their children more severely. As a result, abused children often become abusing parents.

Construct D: Parent-Child Role Reversal

A fourth common parenting behavior among abusive parents has been described as a role reversal. When a role reversal exists, children are in an environment in which they are expected to be sensitive to and responsible for much of the happiness of their parents. Morris and Gould (1963) describe parent-child role reversal as an interchanging of traditional role behaviors between parents and children, so that children adopt some of the behaviors traditionally associated with parents. Steele (1975) describes role reversal essentially as parents' acting like helpless, needy children, and looking to their own babies as if they were adults who could provide parental care and comfort.

According to Ackley (1977), potential abusers both seek and shun intimate adult relationships. On one hand, potential abusers seek intimacy in order to obtain what was missing in their earlier parental relationships. This leads them to define a close relationship as one in which, like children, they can: (a) obtain emotional support and warmth without giving much in return, and (b) depend on their partners to solve the problems of living that adults are called upon to solve. Alternately, intimacy is shunned, because the parent's childhood attempts at intimacy were such failures. It is these initial failures that lead adults to believe that close relationships are dangerous and doomed to produce disappointment and threats to self-esteem because people cannot be trusted.

The effects of role reversal on abused children are destructive. Assuming the role of the responsible parent, children fail to negotiate the developmental tasks which must be mastered at each stage of life if they are to achieve normal development and healthy adjustment (Erikson, 1950; Havighurst, 1951). Failure to perform any of the developmental tasks not only hampers development in succeeding stages, but also further reinforces feelings of inadequacy. Children in role reversal situations have little sense of self, as they exist only to meet the needs of their parents.

Implications for Parenting Education Programs

The following guidelines for curriculum development in parenting education are based on the four abusive parenting constructs. Curriculum suggestions specific to each of the four constructs are presented. Suggested teaching strategies also are discussed. The curriculum guidelines and suggested teaching strategies are applicable to elementary and secondary school parent training programs.

Construct A: Inappropriate Parental Expectations

Inappropriate parental expectations relative to their children's developmental capabilities stem primarily from the lack of an adequate knowledge base in

child development. Parents are unaware of the point at which a child is capable of performing specific behaviors. General developmental principles focusing on the physical and intellectual capabilities of children, from birth through adolescence, should be a vital part of parenting instruction.

A desirable instructional strategy for teaching child development allows the students to interact with infants and young children. This may be accomplished by providing day care nurseries, within the schools and community, where practical skills in bathing, feeding, and playing with infants can be taught. An alternative to day care nurseries in the schools in the "cross-age" tutoring program. The rationale behind the program is to allow older students to work with younger ones in all areas of the curriculum.

Construct B: Lack of Empathic Awareness

An essential quality of good parenting and child-rearing is parents' ability to be empathically aware of their children's needs. The key to increasing one's ability to be empathic rests in being able to trust, to communicate, and to become aware of one's own needs and the needs of others. Trust is established through consistent, appropriate relationships designed to meet the needs of both individuals. Needs awareness activities, group and individual trust exercises, and demonstrations of caring and nurturing behaviors increase the likelihood of developing the ability to trust others and oneself.

Communication skills, both intra-individual (with self) and inter-individual (with others) are essential characteristics of empathic people. Active listening, problem ownership, and "I" messages should be included as activities to increase empathy.

Classroom nurturing activities act to reinforce empathic abilities. Allowing students to care for plants and animals in the classroom, and class projects designed to create an awareness in the community relative to topics of national or local significance foster empathic attitudes.

Construct C: The Value of Physical Punishment

Utilization of physical punishment is not unique to abusive parents. Punishing a child by hitting is a form of discipline widely practiced in our society. A recent national study of attitudes towards violence found that 48% of all respondents indicated that, under certain circumstances, they would punish their children by hitting them with a belt or a paddle (Blumenthal, Chadiha, Cole, & Jayaratne, 1975).

Instruction designed to provide alternatives to the use of physical punishment as a means of disciplining children would have residual benefits in reducing the occurrence of physically abusive parent-child interactions. Training in behavior management techniques, such as contingency management, positive reinforcement, ignoring inappropriate behavior, use of time out, etc., are important skills for perspective parents to learn. Other essential components include learning how to cope with stress and how to deal with one's anger, and

utilizing community resources. Crisis nurseries, crisis hot lines, day care centers, help lines, Parents Anonymous, and other self-help groups should be discussed as viable resources for helping the perspective parent to cope with stressful situations.

Construct D: Role Reversal

Abusive parents often look to their children for satisfaction of their own needs. When carried to an extreme, children are unable to meet these needs and often are perceived by their parents as inadequate. Such children become the victims of parental mistreatment. Roles are often reversed, because parents never have obtained or lose an awareness of their own needs, values, beliefs, strengths, and limitations. The focus of curriculum should be on helping students to identify and clarify their own needs. Young adults should realize that becoming a parent is a major responsibility which entails nurturing a dependent infant. To develop appropriate parenting skills and attitudes, young adults should understand their own needs in relation to their prospective role as parents. Creating an atmosphere within the instructional setting which encourages young adults to examine their needs and perceptions of marriage and parenthood could heighten their awareness and understanding about the role of parenting. Values clarification exercises and other self-awareness activities implemented through music, literature, etc. increase the student's self-understanding. Such self-understanding ultimately leads to heightened awareness of others.

Summary

Identification of the four parenting constructs describing the parenting and child-rearing behaviors of abusive parents is viewed as important in the development of parenting education curriculum. The four abusive parenting constructs provide a conceptual framework within which socially sanctioned parenting training can be modified to meet the particular child-rearing practices of different ethnic groups. The failure of our society to provide parenting education based on the questionable theory of abusive parenting behaviors perpetuated from generation to generation, or differences in the child-rearing practices of varied ethnic groups, can no longer be justified. All individuals, regardless of ethnic background, cultural differences, or religious preference, could significantly profit from parenting education.

It is known that the number of children identified as abused and/or neglected by their caretakers is only a small percentage of the actual incidences which never come to our attention. If society hopes ever to begin eliminating the violence experienced by hundreds of thousands of children each year at the hands of their caretakers, massive national programs in responsible parenting education must be developed and implemented in the communities.

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Behavioral Contracting With Behaviorally Disordered and Delinquent Children and Youth: an Analysis of the Clinical and Experimental Literature

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Behavioral or contingency contracting (Dardig & Heward, 1976; Derisi & Butz, 1975; Homme, Csanyi, Gonzales, & Rechs, 1969; O'Banion & Whaley, 1981) is an intervention technique frequently used to modify the deviant behavior of behaviorally disordered or delinquent children and youth. Behavioral contracting involves the negotiation and implementation of formal written agreements between individuals that specified behavior change on the part of one or all parties to the agreement will be exchanged for new, and usually positive, consequences for the behavior change (Rutherford, 1975).

The behavioral contracting literature focuses on five areas of contracting: (a) marital contracting (Azrin, Naster, & Jones, 1973; Harrell & Guerney, 1976; Stuart, 1969, 1976; Weiss, Bircher, & Vincent, 1974; Wieman, Shoulders, & Farr, 1974) in which spouses formally negotiate and exchange behaviors in order to positively enhance the marital dyad; (b) adult self-change contracting in which adults negotiate and implement contracts to change such behaviors as drug abuse (Boudin, 1972; Hall, Cooper, Burmaster, & Polk, 1977; Polakow, 1975; Polakow & Doctor, 1973, 1974), alcoholism (Miller, 1972), weight control and cardiovascular physical fitness (Mann, 1972; Vance, 1976), smoking (Spring, Sipich, Trimble, & Goeckner, 1978), child abuse (Polakow & Peabody, 1975), and performance as a foster parent (Stein & Gambrill, 1976; Stein, Gambrill, & Wiltse, 1974); (c) family contracting (Alexander, 1973; Alexander & Barton, 1976; Alexander & Parsons, 1973; Blechman, 1974; Blechman & Olsen, 1976; Blechman, Olsen, & Hellman, 1976; Blechman, Olsen, Schornagel, Halsdorf, & Turner, 1976; Jayaratine, 1978; Jayaratine, Stuart, & Tripoli, 1974; Kifer, Lewis, Green, & Phillips, 1974; Lysaght & Burchard, 1975; Malouf & Alexander, 1974; Parsons & Alexander, 1973; Rutherford & Bower, 1975; Weathers & Liberman, 1975a, 1975b) in which the emphasis is on the process by which each family member negotiates change in specified behaviors contingent upon concurrent change in other family members' behaviors; (d) academic performance contracting (Bristol & Sloane, 1974; McCoy, Epstein, Parker, Brush, & Stephens, 1977; McReynolds & Church, 1973; Schwartz, 1977; Wil-

liams & Anandam, 1973) in which students negotiate increases in the quality and/or quantity of their academic performance in exchange for specified reinforcers; and (e) child or adolescent contracting in which the child or youth whose behavior is considered disordered or delinquent is the primary target of behavior change through contracting. The purpose of this review is to analyze the clinical and empirical literature relative to this latter area of contracting. While the other areas of contracting occasionally involve participants who are labeled behaviorally disordered or delinquent, child or adolescent contracting focuses primarily on changing the specific social behaviors which result in the child or youth being considered behaviorally disordered or delinquent.

There is a sizable body of clinical and empirical literature devoted to behavioral contracting with behaviorally disordered and delinquent children and youth in family, school, and community settings. This review is designed to: (a) describe the clinical (e.g., nonexperimental) literature on behavioral contracting with behaviorally disordered or delinquent children and youth; and (b) describe and critically analyze the experimental literature relative to behavioral contracting with this population.

Clinical Case Studies

Over a third (13 out of 36) of the articles which report the use of behavioral contracting with deviant children or adolescents present clinical case studies (see Table 1). While descriptive information is provided relative to the subject(s) and procedure(s), no controls are evident in these articles either in the form of control or comparison subjects who do not receive the contracting treatment or in the form of comparisons with the subject's own behavior prior to and following the contracting process. In addition, neither baseline data nor reliability data relative to the dependent measures (e.g., contract behaviors) are reported in these articles, and only 5 of the 13 articles report follow-up data. Four of the articles (Dinoff & Rickard, 1969; Rutherford, 1975; Rutherford & Bower, 1975; and Weathers & Liberman, 1978) fail to report the results of the contracting intervention, and the remaining articles provide no empirical evidence supporting the reported success of contracts in modifying the deviant behavior of the clients.

A possible confounding variable in the investigation of the efficacy of behavioral contracting is the frequent use of concurrent treatments or interventions in the contracting literature with behaviorally disordered or delinquent populations. Negative reinforcement, point systems, assertive training, social reinforcement, and/or desensitization all have been used along with contracts in most of the clinical case studies reported in this review. The effects of these treatments are not compared separately to the effects of contracting alone on disordered or delinquent behavior, thus reported positive results due to behavioral contracts are open to question.

While these clinical case studies fail to provide reliable and replicable results contingent upon contracts, they generally do provide both descriptions of the contracting process and a number of examples of actual behavioral contracts. A major contribution of these clinical case studies to the behavioral contracting literature with behaviorally disordered and/or delinquent children and youth is

TABLE 1
Clinical Case Studies

Author(s)	N	Sex	Age/ Grade	Label	Setting	Dependent Measure(s)	Concurrent Treatment(s)	Follow-up	Sample Contract(s)	Results	Contractor (Arbitrator)
Brooks (1974)	1	F	15	Truant	School/home	School attendance	Negative reinforcement	—	1	Full attendance	Mother (Counselor)
	1	M	16	Truant	School/home	School attendance	Negative reinforcement	3 weeks	1	Full attendance	Mother (Counselor)
Cantrell, Cantrell, Huddleston, & Woolridge (1969)	1	F	—	School phobic	School/home	School attendance	Point system	1 year	—	Full attendance	Teacher & mother
	1	M	—	Unmotivated student	School/home	Grades	Point system	—	1	Improved grades	Teacher & mother
DeRisi & Butz (1975)	1	F	17	Suicidal	Home	Family participation	Assertive training	—	2	Held job & dated nondelinquent boys	Parents (Counselor)
	1	M	13	Delinquent	Institution	Physical assaults & tolerance of teasing	Point system	—	7	—	Counselor
	1	M	20	Chronic schizophrenic	Community mental health center	Take medication, therapy group attendance, assaultive & destructive behavior	Medication	3 months	4	Reduced assaults & incarceration	Parents & boarding house owner (Therapists)
Dinoff & Rickard (1969)	1	M	12	Emotionally disturbed	Home	Carry out garbage & work behavior	—	—	1	—	Father
Gershman (1976)	1	M	—	Compulsive fire setter	Home	Bringing matches to mother and not striking matches	Point system & social reinforcement	3 weeks	1	Eliminated firesetting	Mother
James (1975)	102	79M 23F	6–15	Truant, disruptive, undisciplined	Community (home, school, courts, social services)	Specific behavioral tasks each day	—	—	1	Reportedly effective	Parents & teachers (Therapists)

TABLE 1 *(continued)*

Author(s)	N	Sex	Age/ Grade	Label	Setting	Dependent Measure(s)	Concurrent Treatments(s)	Follow-up	Sample Contract(s)	Results	Contractor (Arbitrator)
Rutherford (1975)	1	M	15	Delinquent	School/home	School attendance & assignment completion	—	—	1	—	Mother & Mother's friend (Counselor)
	1	M	16	Delinquent	School	School attendance and appropriate classroom behavior	Point system	—	1	—	Teacher (counselor)
	1	F	14	Delinquent	Home	School attendance & curfew	—	—	1	—	Mother (Probation officer)
	1	F	13	Delinquent	Institution	School attendance, therapy group attendance & participation, & task completion	Point system	—	1	—	Teacher & unit supervisor (Behavioral counselor)
Rutherford & Bower (1975)	1	M	17	Delinquent	Home	Homework completion, grade improvement, & curfew	Point system	—	1	—	Parents (Family therapist)
Stedman (1976)	1	F	9	School phobic	Home	School attendance	Point system & desensitization	—	—	Full attendance	Parents (Therapist)
Teicher, Sinay, & Stumphauzer (1975)	1	M	12	Alcohol abuser	Community	Days sober, school attendance, home compliance	—	—	2	Sober, full attendance, compliant	Paraprofessional & mother
Thomas & Ezell (1972)	1	M	17	Truant	School	Class attendance	—	7 months	—	Full attendance	Counselor
Tymchuk (1979)	1	M	12	Poor student	School/home	Reading passages perfect and spelling tests correct	Point system	—	2	Perfect school performance	Parents
Weathers & Lieberman (1978)	1	F	14	Truant	Home	School attendance & grades	—	—	1	—	Parents (Therapist)

the obvious applied nature of these contracts. Parents were involved in contracting in 15 of the 19 individual cases reported, while teachers and school counselors were involved in 8 of the 19 cases. While counselors, family therapists, psychotherapists, behavioral counselors in institutions, probation officers, and specially trained paraprofessionals served as trainers and arbitrators in the contracting process, all but two of the cases involved parents and/or teachers as the contractors with the behaviorally disordered or delinquent children or youth. The two studies which did not involve either parents of teachers in the contracting process involved a detention center counselor in a contract with an institutionalized adolescent (DeRisi & Butz, 1975) and a school counselor in a contract with a truant adolescent (Thomas & Ezell, 1972).

Single-Subject Design Studies

One half (18 out of 36) of the behavioral contracting articles with deviant children and/or adolescents involve some attempt to control for deficiencies noted in the clinical case studies described earlier. These single-subject design studies (see Table 2) provide clearly specified dependent measures of target behaviors, repeated measurement of these behaviors, and baseline or preintervention data relevant to these behaviors (Hersen & Barlow, 1976). Single-subject or N-1 studies, in which the subject serves as his or her own control (i.e., where behavior is compared when the contracting contingency is in effect and when it is not in effect) are grouped in five categories: (a) AB studies; (b) ABA studies; (c) ABAB studies; (d) variations of ABCA studies; and (e) a multiple-baseline study.

AB Studies

Eight of the single-subject design studies in this review provide baseline (A) and behavioral contracting intervention (B) data relative to various behaviors of behaviorally disordered or delinquent subjects in home, school, mental health clinic, or camp settings.

AB studies, in general, are "quasi-experimental" (Campbell, 1969) in that they fail to demonstrate whether behavioral change during the B phase is in fact due to the intervention or due, instead, to any of a number of confounding variables such as maturation, history, instrumentation, selection, etc. Therefore, while AB studies do establish whether behavior does change and the magnitude of that change, studies using this design cannot prove that the intervention (B) was the cause of the change (Cooper, 1981).

Related to the large number of possible confounding variables mentioned by Campbell (1969) and Cooper (1981) in AB studies in general, five of the contracting studies reviewed here which followed an AB design format presented concurrent treatment(s) to contracting. Anandam and Williams (1971), Stabler and Warren (1974), and Welch and Carpenter (1974) all initiated point systems concurrently with the behavioral contracts; while Welch and Carpenter (1974) also instituted desensitization procedures; Stumphauzer (1976) instituted self-control and assertive training procedures; and Nelson, Worell, and Polsgrove

TABLE 2
Single-Subject Design Studies

Author(s)	N	Sex	Age/ Grade	Label	Setting	Dependent Measure(s)	Length of Baseline	r*	Concurrent Treatment(s)	Follow-up	Sample Contract(s)	Results	Contractor (Arbitrators)
AB Studies													
Anandam & Williams (1971)	30	—	8th	Disruptive students	School	Classroom behaviors	2 days	—	Point system	—	1	Improved classroom behavior & grades	Teacher
Frederiksen, Jenkins, & Carr (1976)	1	M	17	Drug abuser	Home	Drug use & family happiness ratings	4 sessions	—	—	2 weeks, 6 months, 1 year	—	Eliminated drug use & increased family happiness ratings	Parents
Nelson, Worell, & Polsgrove (1973)	9	8M 1F	7–11	Behaviorally disordered	Camp	Homesick statements, leaving group, threats, off-task, disruptive vocalization, noncompletion of tasks, name calling & mimicry, wetting pants or bed, appropriate verbal statements	2–4 days (5 obs.)	—	Peer management of contracts	—	1	Significant change in 8 of 9 cases	Peers (Counselors)
Reese & Filipczak (1980)	1	M	Jr. Hi.	Truant	School	School attendance & academic work rate	25 days & 20 days	—	—	4 months	—	Increased attendance & increased academic work rate	Teacher
	1	M	Jr. Hi.	Poor student	School	Academic work rate	15 days	—	—	—	—	Increased academic work rate	Teacher
Stabler & Warren (1974)	1	F	14	Behaviorally disordered	Mental health clinic	Trichotillomania (pulling own hair)	3 weeks	—	Point system	6 months	—	Eliminated hair pulling	Therapist
Stuart (1971)	1	F	16	Delinquent	Home	Curfew & chore completion	24 days	—	—	—	1	Reportedly effective	Parents

TABLE 2
Single-Subject Design Studies (continued)

Author(s)	N	Sex	Age/ Grade	Label	Setting	Dependent Measure(s)	Length of Baseline	Y*	Concurrent Treatment(s)	Follow-up	Sample Contract(s)	Results	Contractor (Arbitrators)
Stumpfauzer (1976)	1	F	12	Pre-delinquent	Mental health clinic	Stealing	3 weeks	—	Self-control & assertive training	6, 12, 18 months	—	Eliminated stealing	Therapist & Parents
Welch & Carpenter (1974)	1	M	8	School phobic	School/ Home	School attendance	6 days	—	Point system & desensitization	—	—	Full attendance	Parents (Therapist)
ABA Studies													
Cohen, Keyworth, Kleiner, & Brown (1974)	1	M	15	Delinquent	Special school	Reading tasks completed	18 days (5-day reversal)	—	Point system	—	1	Increased reading tasks complete	Parents (Staff)
Reese & Filipczak (1980)	1	M	Jr. Hi.	Truant	School	School attendance	5 days (5-day reversal)	—	—	1 month	—	Increased attendance	Teacher
	1	F	Jr. Hi.	Truant	School	School attendance	15 days (15-day reversal)	—	—	1 month	—	Increased attendance	Teacher
Thoresen, Thoresen, Klein, Wilbur, Becker-Haven, & Haven (1979)	1	M	Elem.	Troubled child	Residential treatment facility	Arguing	31 days (31-day reversal)	—	Point system & self-control training	—	1	Decreased arguing	Teacher & parents
ABAB Studies													
Bristol (1978)	1	M	8	Aggressive child	School/ home	Fighting	1 week (3-week reversal)	—	—	7 months	1	Eliminated fighting	Teacher & parents (Counselor)
Cohen, Keyworth, Kleiner, & Libert (1971)	1	M	15	Delinquent	Special school	Academic task completion	11 weeks (3-week, 1-week, 3-week reversal)	—	Point system	—	7	Increased task completion	Parents
	1	M	14	Delinquent	Special school	Academic task completion	8 weeks (7-week reversal)	—	Point system	—	6	Increased task completion	Mother & minister

TABLE 2
Single-Subject Design Studies (continued)

Author(s)	N	Sex	Age/ Grade	Label	Setting	Dependent Measure(s)	Length of Baseline	r*	Concurrent Treatment(s)	Follow-up	Sample Contract(s)	Results	Contractor (Arbitrators)
MacDonald Gallimore, & MacDonald (1970)	6	M	9th	Truants	School	School attendance	6 weeks (2-week reversal)	—	—	—	—	Increased school attendance for 4 of 6	Parents, pool hall proprietor, friend's mother, grandmother (Attendance counselor)
ABCAC Study													
Sapp & Williams (1971)	5	1M 4F	11th	Apathetic/ disruptive students	School	Appropriate classroom behavior	15 days (3-day reversal)	.86 to .97	Point system & social reinforcement (compare proclamation with contract)	—	1	Increased appropriate classroom behavior. Contract equal	Teacher
ABACABAC Study													
Williams, Long, & Yeakley (1972)	16	—	12th	Advantaged but disruptive students	School	Appropriate classroom behavior	2 weeks (2-week reversal)	.85	Point system (compare proclamation with contract)	—	—	Increased appropriate classroom behavior. Contract slightly superior	Teacher
ABCB/BCB/BCB Study													
Lovitt & Curtis (1969)	1	M	12	Behaviorally disordered	School	Academic response rate	9 days	—	Point system (compare proclamation with contract)	—	—	Increased academic response rate. Contract superior	Teacher
Multiple-Baseline Study													
Weathers & Liberman (1975a)	6	—	14–17	Delinquents	Home	Verbal abusiveness, curfew, school attendance	11 to 32 days	.78 curfew .79 school attendance	Communication skills training & videotape feedback	3 months	—	Decrease verbal abusiveness. Not effective with curfew & school attendance	Family

*reliability

(1973) investigated peer management procedures at the same time as the behavioral contracts were initiated. Thus, the reported positive effects of contracting may have been due to the contracts, to the contracts in combination with other intervention procedures, or to the other intervention procedures and not the contracts.

Hersen and Barlow (1976) presented two instances in which confidence could be increased although, again, not guaranteed, in the reported results of AB studies. The first instance involved applying the same intervention to multiple target measures. The Nelson, Worell, and Polsgrove (1973) study, for example, involved peer-managed behavioral contracts across specific behaviors of nine behaviorally disordered children in a camp setting. The behaviors changed in the desired direction in eight of the nine cases following the behavioral contracting intervention, lending some additional credibility to the possible positive effects of the behavioral contracts. The second instance in which confidence in the intervention could be increased was when there was extended follow-up of a single target measure. Four of the contracting studies using an AB design provided extended follow-up relative to the level of the dependent measure following termination of the contract(s). Frederiksen, Jenkins, and Carr (1976) followed up on the drug use and family happiness ratings of a 17-year-old drug abuser and his family at 2 weeks, 6 months, and 1 year following contract termination. Drug use was eliminated, and family happiness ratings remained high at each of these intervals. Reese and Filipczak (1980) found that a junior high school truant had maintained increased school attendance and increased academic work rate 4 months following the end of his behavioral contract. Stabler and Warren (1974) reported that trichotillomania, or pulling one's own hair, remained at zero rate 6 months after the completion of a behavioral contract between a 14-year-old girl and her therapist in a mental health clinic. In another study involving a contract between a mental health clinic therapist and a young client, Stumphauzer (1976) reported a complete cessation of stealing by a twelve-year-old predelinquent boy at 6, 12, and 18 months following the contract. The follow-up data on these four studies lends a bit more credibility to the reported effects of the behavioral contracts.

A major limitation of all eight of the behavioral contracting studies reviewed here which used an AB design is that no interobserver or intraobserver reliability data were reported relative to the dependent measures targeted for modification through the contracting intervention.

Despite the "quasi-experimental" nature of these AB studies, and the failure to report reliability data, they are an improvement over the clinical case studies presented in Table 1. This improvement is most evident in the use of baseline data that allows for comparison between the frequency of the behavior prior to and during the contracting intervention, in the use of repeated measures of the behavior across the baseline and intervention phases, and clearly specified, although possibly unreliable, measures of the behaviors in question. These AB studies also demonstrate the potential applied nature of behavioral contracting, with all but one study (Stabler & Warren, 1974) using parents, teachers, or peers as the primary contractor with the behaviorally disordered or delinquent child or adolescent.

ABA Studies

The introduction of a reversal or return-to-baseline phase in single-subject design studies greatly enhances the analysis of the effects of an intervention on target behavior. Baer, Wolf, and Risley (1968) state, "An experimenter has achieved an analysis of behavior when he can exercise control over it" (p. 94). The ABA studies, the ABAB studies, the ABCAC study, and the ABACABAC study in this review (see Table 2) demonstrate this control by applying and withholding behavioral contracts contingent upon a variety of child and adolescent behaviors in school, home, and residential treatment center settings.

Four cases in the behavioral contracting literature on behaviorally disordered and/or delinquent children and youth use an ABA format for analysis. Cohen, Keyworth, Kleiner, and Brown (1974) instituted a 5-day reversal following 20 days of contracting for reading tasks completed by a 15-year-old delinquent in a special school. Completion of reading tasks fell dramatically during the reversal phase, lending credence to the efficacy of the behavioral contract in modifying this behavior. This study was limited, however, in that no reliability or follow-up data were reported, and a point system was run concurrently with the contract.

Reese and Filipczak (1980) presented two cases in which behavioral contracts were used with junior high school truants. A 5-day reversal was instituted in both cases, following 21 days of contracting with the first adolescent and 5 days of contracting with the second adolescent. Although they failed to report reliability data, Reese and Filipczak found that attendance increased markedly in both cases during the contracting intervention. Attendance fell from 100% during the B phase to 79% 1 month after termination of the contract in the first case, and from 100% to 80% in the second case. The follow up rate of attendance, however, was significantly higher than the initial baseline (A) rate.

Reese and Filipczak (1980) did not report any systematic concurrent treatment with the behavioral contracting. Although they reported that a variety of tangible and intangible reinforcers were provided contingent upon contracted school attendance, no point system or other intervention was reported which may have confounded the potential effects of contracting.

Thoresen, Thoresen, Klein, Wilbur, Becker-Haven, and Haven (1979) found that a behavioral contract significantly decreased the arguing behavior of an elementary-aged child in a residential treatment facility for troubled children. However, the 31 days of reversal data following the 41 days of contracting indicated no significant reversal trend back to initial baseline levels of arguing behavior. The reversal phase in this study indicated that reduction of arguing probably was not due to contracting alone, but more likely was due to some combination of contracting and the concurrent treatments of a point system and self-control training or to some other confounding variable(s), (Campbell, 1969). Thoresen et al. (1979) also failed to provide either reliability or follow-up data.

While ABA studies add the reversal phase for evaluation purposes, a serious clinical and ethical limitation of this analysis technique rests in terminating treatment during the second A phase when the intervention is not in effect, thus denying the client the full benefits on the intervention (Hersen & Barlow, 1976). The delinquent adolescent in the Cohen et al. (1974) study returned to a zero

rate of tasks completed in the second B phase, and no additional contracts were reported as initiated with this subject. The school attendance of both truants in the Reese and Filipczak (1980) article dropped by 20% in the reversal phase, and no new contracts were established to raise attendance to the near perfect levels achieved in the contracting phase. Finally, the subject in the Thoresen et al. (1979) study maintained a low rate of arguing in the second A phase, leaving the efficacy of the contracting intervention alone in doubt.

ABAB Studies

The most sound single-subject design, in terms of both evaluating intervention effects and dealing with the clinical and ethical issue of stopping treatment during a period of no intervention, is the ABAB design. When the target behaviors functionally change in relation to the presence or absence of the intervention through two occasions (e.g., from B_1 to A_2, then from A_2 to B_2) the positive and replicable (Kratchowill, 1978) effects of the intervention are strongly demonstrated (Hersen & Barlow, 1976).

Three articles contain ABAB studies designed to investigate the effects of behavioral contracting on the disordered or delinquent behaviors of subjects in home, school, or special school settings (see Table 2). Bristol (1976) followed an ABAB design in eliminating the fighting behavior of an 8-year-old boy through behavioral contracting. The subject had nine fights during the 1-week baseline (A_1) phase, an average of .30 fights per week during the 10-week contracting (B_1) phase, an average of 14.3 fights per week during the reversal (A_2) phase of 3 weeks duration, and an average of 4.5 fights per week for the 6-week reinstatement of contracting (B_2) phase, with the last 3 weeks of the reinstatement phase showing no instances of the fighting behavior. The apparent flaws in this otherwise well-constructed ABAB contracting study were the lack of reported reliability data and the subjective, as opposed to objective, report 7 months after completion of the intervention that the subject was "doing well" and was a "typical third grade boy." On the positive side, the contract was designed to provide various tangible and intangible reinforcers contingent upon the boy's not fighting during the school day. As no confounding concurrent treatments were presented, the contracting intervention appeared to eliminate fighting behavior.

Cohen, Keyworth, Kleiner, and Libert (1971) investigated the effects of multiple contracts on the academic task completion of two youths in a special school for delinquents. Following 11 weeks of baseline, various modifications of an academic performance contract were initiated in the first case for 2 weeks, 1 week, 2 weeks, and 3 weeks interspersed between reversal periods of 3 weeks, 1 week, and 3 weeks duration. This repeated ABABABAB design demonstrated that academic task completion was under the control of the specific behavioral contracts described in this case.

Cohen et al. (1971) found similar results in the second case in which academic task completion was brought under the functional control of behavioral contracts. Academic task completion, measured by work checks and reading checks earned in a highly structured instructional setting, increased markedly

during the 5 weeks of the first contracting intervention phase and the 2 weeks of the second contracting intervention phase over baseline rates.

Evaluation of behavioral contracting using a reversal design with 6 ninth-grade truants showed highly mixed results in a study conducted by MacDonald, Gallimore, and MacDonald (1970). An attendance counselor arbitrated "deals" or contracts for students' school attendance in return for privileges provided by various contractors such as parents, a pool hall operator, the mother of a friend, and a grandmother. Attendance increased significantly from baseline levels for each of the six subjects during the first contracting intervention (B_1) phase. However, the second baseline (A_2) and second contracting intervention (B_2) phases demonstrated the mixed effectiveness of contracting on the truancy rates of these subjects. The attendance of Subjects 1 and 2 appeared to be functionally related to contracting (i.e., attendance rate rose during periods when "deals" were in effect, and dropped when they were not in effect). The attendance of Subjects 3 and 4, however, failed to show a reversal effect in that attendance remained high during the discontinuation and reinstatement phases of their contracts. Subject 5's attendance dropped significantly during the reversal phase (A_2). However, although his attendance reportedly fell to zero during the reinstitution of the contracting phase (B_2), it appears from the authors' discussion of the case that Subject 5 never returned to school following an incident at a pool hall during the reversal phase and thus never had the opportunity to reinstitute a "deal" for attendance. Subject 6 actually increased attendance during the reversal phase and decreased attendance during the reinstitution phase.

While MacDonald et al. (1970) did not investigate other treatments concurrently with contracting, the varied effectiveness of the behavioral contracts in this study points to the need to control for confounding variables in designing behavioral contracts with behaviorally disordered or delinquent children and youth. Their applied nature, combined with the necessary involvement of both the target subject and the contractor, suggests that outside influences other than concurrent treatments may influence the effectiveness of the contracts. For example, Subject 5's behavior outside of the school setting resulted in his failure to return to school to renegotiate a contract for attendance; and Subject 6 received from his mother (the contractor) a large amount of money (the contracted reinforcer), noncontingently during the reversal period, thus negating the effectiveness of future contracts.

ABCAC Study, ABACABAC Study, and ABCB/BCB/BCB Study

An added dimension of the single-subject contracting studies reviewed here is seen when the effects of contracts are compared not only to baseline or no-contracting rates of behavior but also to behavior rate when proclamations, rather than contracts, are in effect (see Table 2). Proclamations, as defined in the Sapp and Williams (1971), the Williams, Long, and Yeakley (1972), and the Lovitt and Curtiss (1969) studies, referred to teacher-determined and administered contingencies in the form of points redeemable for backup reinforcers. During proclamation phases, teachers were the sole contingency managers. Contracting, on the other hand, referred to student input in determining and administering contingencies for maintaining appropriate classroom behav-

ior or academic response rate. Students, therefore, were co-contingency managers during the contracting phases of these studies.

The results of these three time-series studies indicated that contracting and proclamations were equally effective in increasing the appropriate classroom behavior of five apathetic and disruptive students in an 11th-grade classroom (Sapp & Williams, 1971); that contracts were slightly superior to proclamations in increasing the appropriate classroom behavior of advantaged, but disruptive, 12th graders (Williams et al., 1972); and that contracts, in the form of student arranged contingencies, were superior to teacher arranged contingencies in terms of higher academic response rates, even when magnitude of the reinforcer was kept constant in both the contract and proclamation phases (Lovitt & Curtiss, 1969). Both Sapp and Williams (1971) and Williams et al. (1972) provided relatively high interobserver reliability data (.86 to .97 in the first study and .85 in the second study) and significant decreases in rates of appropriate classroom behavior during the 2-week contracting reversal phase in the former study and the 3-day reversal in the latter study.

Although Lovitt and Curtiss (1969) failed to provide reliability, reversal, or follow-up data, they found that pupil-specified contingency contracts clearly produced higher academic response rates than did teacher-specified proclamations in each of the three replication experiments with a behaviorally disordered pupil. These findings were in contrast to the Sapp and Williams (1971) and Williams et al. (1972) studies in which behavior under student contracts made no (or only slight) gains relative to behavior under the control of teacher proclamations.

Multiple Baseline Study

Weathers and Liberman (1975a) provided the only multiple-baseline study in the child and adolescent contracting literature (see Table 2). In addition to providing comparison data relative to subjects and their families who did not complete the contracting treatment, this multiple-baseline study across subjects (e.g., six delinquents and their families) investigated the effects of behavioral contracts on the verbal abusiveness, curfew violation, and school attendance behaviors of the six 14- to 16-year-old delinquents. The contracts, negotiated between the delinquents and their families, were instituted concurrently with communication skills training and videotape feedback of family interactions. Reliability data were reported for curfew violation and school attendance (.76 and .79, respectively), while verbal abusiveness was measured solely by parents' subjective reports of improvement. The results failed to show any systematic impact of contracting on any of the dependent measures, with the possible exception of verbal abusiveness with several of the subjects.

There appear to be a number of methodological flaws which may have accounted for the lack of behavioral change due to contracting in the Weathers and Liberman (1975a) study. Aside from the possible confounding variables of the multiple concurrent interventions of contracting, communication skills training, and videotape feedback of family interactions, the results may have been influenced by: (a) choosing target behaviors prior to selecting subjects, thus possibly leading to contracting for behavior changes that were not relevant to individual subjects or their families; (b) having only three treatment sessions,

thus leaving little time for the delinquents and their families to adjust to the uniqueness of the experimental situation; (c) using random baselines ranging from 11 to 32 days, thus introduction of the intervention was not dependent upon previous success of the intervention with other subjects; and (d) running the intensive treatment program in the subject's home, a possibly negative factor which may have accounted for 22 drop-outs and the failure of the remaining six subjects to significantly alter their behavior due to contracting.

Single-subject design studies of behavioral contracting with behaviorally disordered or delinquent children and youth suggest that, while contracting may reportedly be successful in modifying a number of deviant behaviors, many design limitations leave the efficacy of these contracting studies open to question. Ten of the 18 articles failed to report reversal or return to baseline data; 12 of these articles reported possibly confounding concurrent treatments; 11 failed to report follow-up data; and 15 failed to report reliability data.

Group Design Studies

There are five group design studies (see Table 3) which analyze the effects of behavioral contracting interventions on delinquent subjects. These studies, each with a treatment or experimental group of subjects who received the contracting intervention and a control or comparison group who did not receive treatment based upon contracting, all reported significant results favoring the contracting intervention.

Douds, Engelsjerd, and Collingwood (1977), in a study with a treatment group of 1200 delinquent subjects who received a combined behavioral contracting/skill training intervention, found that these subjects had significantly fewer rearrests than did subjects not receiving the contracting/skill training intervention. Only 10.7% of those who completed the program were rearrested, while 42.7% of the control subjects were subsequently rearrested. The results of this study are open to question, however, due to the insufficient description of procedures, the failure to report reliability and follow-up data, and the failure to adequately describe the control or comparison subjects.

Fitzgerald (1974) investigated the effects of behavioral contracting on the amount of work time to pay back fines for a group of 20 first-time probationers, aged 14 to 17 years. He randomly assigned subjects to four groups: a group that negotiated and carried out time-off probation contracts; a group that received activity reinforcer contracts; a group that received combined time-off probation/activity reinforcer contracts; and a control group that received no contracted reinforcers for work time. The results indicated that, while those under a time-off probation contract worked significantly longer than did those subjects in the control group, the subjects under the activity reinforcer contract and the combined contract worked significantly more than did those in the first two groups. While reliability and follow-up data were not reported, it appeared that the negatively reinforcing contract of time-off probation was not as reinforcing as the positively reinforcing contract of high-interest activities. Thus, while behavioral contracting appeared to be effective for all of the treatment groups, the specific reinforcers in the contracts appeared to influence the magnitude of that effectiveness.

TABLE 3
Group Design Studies

Author(s)	N	Sex	Age/ Grade	Label	Setting	Design	r*	Dependent Measure(s)	Concurrent Treatment(s)	Follow-up	Sample Contract(s)	Results	Contractor (Arbitrators)
Douds, Engelsgjerd, & Collingwood (1977)	1200	—	—	Delinquents	Home	Treatment Group–Combined contract/skill training N = 1200 No treatment group N = ?	—	Rearrests	Skill training	—	1	Significantly fewer rearrests for treatment group	Parents
Fitzgerald (1974)	20	M	14–17	Delinquents	Community	Group I–Control N = 5 Group II–Time off probation contract N = 5 Group III–Activity reinforcer contract N = 5 Group IV–Time off probation/Activity reinforcer contract (combined) N = 5	—	Work time to pay back fines	Point system & negative reinforcement	—	—	Significantly more work time for treatment groups	Probation officers
Mills & Walter (1979)	76	60M 16F	14–17	Delinquents	Community	Experimental Group–Contracts & Job N = 53 Comparison Group–No contracts or jobs N = 23	—	Job tenure, school attendance, arrests, & institutionalization	Point system & employer training	—	—	Significantly fewer arrests and institutionalizations and longer school or job tenure for treatment groups	Employers (Therapists)
Stahl, Fuller, Lefebvre, & Burchard (1979)	40	—	—	Delinquents	Community	Behavioral Contracting Group N = 14 Behavioral Rehearsal Group N = 13 Self-Evaluation Training Group N = 13	—	Grades & teacher ratings	Point system	—	—	Significantly better grades and more improvement in teacher ratings for BC group	Counselors
Stuart & Tripodi (1973)	79	59M 25F	12–15	Delinquents	Home	Group I–15-day contracts N = 26 Group II–45-day contracts N = 27 Group III–90-day contracts N = 26 Group IV–Comparison N = 15	—	Social behavior at home, court referrals, attitude change	—	—	—	Significantly lower rates of school attendance deterioration and grade deterioration and fewer juvenile court referrals for treatment groups	Parents

*reliability

Hills and Walter (1979), in another group design study, compared the job tenure, school attendance, arrest, and institutionalization rates of 53 delinquents who contracted for positive work-related behaviors on the job with the rates of these behaviors in 23 subjects who did not negotiate work contracts. The experimental group subjects showed significantly longer job tenure and school attendance and significantly fewer arrests and institutionalizations than the comparison group subjects. Whether these results were due to the contracts or to the fact that experimental subjects all had jobs, while comparison subjects did not have jobs, is unclear.

Stahl, Fuller, LeFebvre, and Burchard (1979) compared the effects of three treatment interventions on the grades and teacher ratings of delinquent adolescents. The subjects in the behavioral contracting group had significantly higher grades and better teacher ratings than did subjects in either a behavioral rehearsal group or a self-evaluation training group.

In a study designed to evaluate the effects of three time-constrained behavioral treatments, Stuart and Tripodi (1973) found that contracts influenced the behavior of delinquent subjects. They compared social behavior at home, number of court referrals, and attitude change of 26 subjects who carried out 15-day contracts, 27 subjects who carried out 45-day contracts, and 26 subjects who carried out 90-day contracts with their parents, to a comparison group that was not involved in any contracting treatment. There appeared to be little difference between the three contracting conditions in that they all showed significantly lower rates of school attendance deterioration and grade deterioration and fewer juvenile court referrals than the comparison subjects.

While these five group designs studies did not report reliability or follow-up data; and, with the exception of the Stuart and Tripodi (1972) study, each reported concurrent treatments in the form of skill training, point systems, negative reinforcement, and/or employer training, behavioral contracting did appear to have some positive effect on deviant behaviors of the delinquents.

Conclusion

Although the majority of the behavioral contracting studies with behaviorally disordered or delinquent children and youth contain many methodological flaws and omissions (see Tables 1, 2, and 3), there appears to be sufficient clinical and empirical evidence to suggest that contracting has contributed to behavioral change in a number of instances with this population. Behavioral contracting appears to be a potentially useful intervention technique for parents, teachers, probation officers, therapists, counselors, and others who deal with disordered and delinquent children and youth. In order to understand more fully the effects of contracting and to maximize those effects, however, further research on behavioral contracting with deviant children and youth which focuses on providing: (a) reliability data relative to the dependent measures; (b) differential analysis of the effects of contracting as opposed to contracting combined with concurrent treatments; (c) follow-up data relative to the long-term effects of contracting; and (d) careful and thorough examination of the effects of contracting through both single-subject analysis in the form of ABAB and multiple-baseline designs and controlled group design analysis is necessary. Systematic,

tightly controlled, applied analysis of behavioral contracting will contribute significantly to confidence in this technique as a viable intervention with behaviorally disordered and delinquent children and youth.

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Prediction of Post-Discharge School Adjustment From Social and Academic Gains During Psychiatric Hospitalization

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ABSTRACT

While an increasing number of outcome studies are being conducted on children hospitalized for behavior and emotional disorders, relatively few have concentrated on variables which might predict favorable adaptation. Pre- and posttest achievement scores, as well as teacher evaluations of peer relationships and classroom behavior at admission and discharge, were converted to gain scores reflecting progress made during short-term psychiatric hospitalization. These scores were obtained on 25 adolescents hospitalized over a 2-year period and were correlated with follow-up ratings by teachers in each subject's post-discharge school classroom. Gains in both academic and socialization areas compared favorably with those reported in previous research. Rate of progress in both arithmetic and peer relationships appeared to predict favorable outcome while reading and classroom behavior gains did not. Implications of these findings for instruction and treatment of adolescents hospitalized for severe behavior disorders are discussed.

Academic progress of children with emotional and behavioral disorders generally has been demonstrated to be uneven and extremely variable (Bower, 1969; Feldhusen, Thurston, & Benning, 1970; Forness, Frankel, Caldon, & Carter, 1980; Glavin & Annesley, 1971). Several reasons have been suggested for this, including the frequent difficulty of obtaining reliable measures of academic progress in this population and the fact that many school intervention programs must, of necessity, concern themselves primarily with children's classroom behavior and only secondarily with academic achievement (c.f. Hewett & Taylor, 1980; Morrison & MacMillan, 1978). Similar concern has been expressed regarding the assessment of social or behavioral progress in these children, particularly with respect to evaluation of the effectiveness of classroom interventions (Forness, 1979a; Gesten, Cowan, & DeStefano, 1978; Lorion, Cowan, & Caldwell, 1975; Quay, 1972; Spivack & Swift, 1973).

Recent federal regulation requiring evaluation of educational programs (c.f. Dunst, 1979; Forness, 1979b) has, nonetheless, brought renewed interest to the issue of assessing academic and social progress of disturbed and behavior disordered children. Setting reasonable educational goals, as well as evaluating

whether progress has been made towards such goals, is difficult for teachers of behavior disordered children, particularly given the subjective nature of what constitutes disturbed behavior (Hobbs, 1978; Kaufman, 1980; Wallbrown, Fremont, Nelson, Wilson, & Fisher, 1979). Related to this is the problem of determining when a child might be ready either to be mainstreamed or to be moved from one type of classroom program to another (Forness, 1979c; Algozzine, Whorton, & Reid, 1979).

The problems referred to above are somewhat magnified, and perhaps brought into clearer focus, in the case of disturbed or behavior disordered children who are returned to school settings after having been hospitalized for psychiatric treatment. Several authors have commented on the problem of such children's reentry into both regular and special classrooms in the community (Ferdinande & Cooligan, 1980; Forness, 1977, 1978; Hewett, 1967; Lira & White, 1978). A primary concern has been how to determine a child's or an adolescent's *readiness* for return to community school programs and the nature of the problems which such a student might face upon return to more normalized classroom settings. Follow-up studies of such patients have begun to focus specifically on school outcome variables (Forness & Caldon, 1980; Forness & Barnes, in press; Gossett, Lewis, Lewis, & Phillips, 1973); but relatively little progress has been made towards delimiting the specific variables which might predict favorable educational prognosis. Patients with a shorter length of hospitalization seem to have a more favorable outcome in some cases (Forness & Caldon, 1980), a finding which also is characteristic, interestingly enough, of children assigned to resource rooms (Ito, 1980). Such findings, however, may be an artifact of the initial severity of disabilities in children who appear to require longer treatment periods.

The present study addresses itself to the issue of predicting post-discharge school adjustment of adolescents discharged from a psychiatric hospital after short-term treatment. The particular predictive variables used are the gains made by such patients during hospitalization. Gains in both socialization and academic achievement were systematically assessed. The latter variable has been examined in a previous study on a similar population (Forness, Frankel, Caldon, & Carter, 1979). While questions on the usefulness of cognitive gains made by children in special education are still unresolved (c.f. Martin, 1979), the present study is intended to examine the usefulness of gain scores in determining subsequent school adjustment.

METHOD

Subjects for the study were selected from a total population of 82 patients, aged 12 to 19 years, who were admitted to an adolescent inpatient ward in the UCLA Neuropsychiatric Institute over a 2-year period, from January 1978 to January 1980. All were hospitalized for serious behavior disorders, and a complete description of the hospital treatment program and school approaches is provided in Forness (1977, 1978).

It should be mentioned briefly that psychiatric treatment on the ward was individualized for each patient and included a combination of short-term psycho-

dynamic, family therapy, and behavioristic treatment approaches. Each patient was given from two to three therapy sessions each week by psychiatry residents in training, including a family therapy session along with a staff social worker. Nursing staff used behavioral approaches for management of social behavior, and each adolescent attended four to six sessions of occupational and recreational therapy each week. The hospital school program was based on individualized instruction in a group setting with behavioristic approaches for motivation and management of classroom behavior. Patients attended 2 hours of school daily from 1:00 to 3:00 p.m. At any one time over the 2-year period, 12 to 16 adolescents were enrolled in the classroom, and their length of hospitalization was 4 to 5 months, on the average.

Achievement testing of each adolescent was done during the first week of hospital admission and again during the last 10 days before discharge. All tests were administered by certified classroom teachers. The achievement test used was the California Achievement Test, Upper Primary Level (Tiegs & Clark, 1963); and three subtests, Reading Vocabulary, Reading Comprehension, and Arithmetic Fundamentals were used in the data analysis. Alternate forms of the test were used in pre- and posttesting.

Although 82 subjects had been admitted over the study period, complete sets of scores were unavailable on a few subjects who were discharged before posttesting could be completed; but comparison of the scores of these subjects with the remaining subjects in the population did not reveal any systematic bias in sex, age, length of stay, or pretest achievement levels. Although IQ was not available on all subjects, examination of medical records revealed that most subjects were within the mildly retarded or low normal range of intelligence (IQ of approximately 60 to 90). Achievement gain scores for all subjects were computed by subtracting each adolescent's achievement scores at admission from those obtained at discharge.

Gains in socialization were measured in two areas: peer relationships and classroom behavior. These were rated, during the same two periods as the pre- and post-achievement testing, by each adolescent's classroom teachers. Peer relationships were rated on four items: participation in group activities, age-appropriate interactions, acceptability by peers, and ability to develop friendships. Classroom behavior also was rated on four items: task attention, working independently, communicating needs appropriately, and manageability in the classroom. Each item was rated independently by two teachers, on each occasion. Ratings were done on a 7-point Leickart-type scale, thus total score for each area ranged from 4 to 28 points, the higher score denoting better adjustment in each case. Ratings by both teachers were averaged for each item *prior* to obtaining the total score on each occasion. (Complete description of these scales is available from the senior author upon request.) Gain scores were computed by subtracting each subject's total rating in each of the two areas at admission from his or her ratings obtained at discharge.

In order to obtain a follow-up measure of each adolescent's classroom performance in the public school after discharge from the hospital, forms were mailed to his or her receiving classrooom teacher in the public school after the adolescent had been discharged for at least 1 month but for less than 3 months. These forms were approved by the UCLA Human Subject Protection Committee, and informed consent letters were signed at time of admission by parents

or guardians. The forms contained rating scales upon which the teachers could make two overall ratings of the adolescent's academic and social adjustment in their classroom at that point. The teachers were asked to rate students on a 5-point scale on both academic adjustment and socialization relative to other students in the same classroom. The 5 points on each scale were (a) much worse than, (b) slightly worse than, (c) about the same as, (d) slightly better than, and (e) much better than the average child enrolled in the placement classroom. Stamped self-addressed envelopes were included for returning these rating forms to the hospital. (Copies of the forms and consent letters are also available upon request.)

RESULTS

Consent letters were obtainable for 43 of the 82 subjects admitted over the 2-year period. Of the 43 forms mailed, 25 were returned, a rate of 58%. The mean age of the sample was 14.9 years, with a range of 13 to 18.5 years. Of the 25 adolescents, 56% were males and 44% were females. The mean length of stay was 4.9 months, with a range of 2.5 to 10 months.

Comparison of the means and standard deviations of this sample with those of the total population of 82 patients did not reveal any significant differences in age, length of stay, or pretest achievement levels. Of these 25 subjects, 17 returned to learning handicapped programs (a California designation for mildly handicapped youngsters with a variety of learning or behavioral problems) and 8 to classes for the severely handicapped. To determine if these groups differed, mean gain scores and outcome measures were compared for each group. Only two comparisons, mean gains in reading comprehension and in peer relationships, approached significance (t's = 1.44 and 1.39, respectively, $p < .10$). It was decided to pool both groups in further analyses since only individual gains and relative classroom standings were the focus of the investigation.

Table 1 provides the mean, range, and standard deviation of the pre- and postachievement subtests and the two socialization ratings. Note that, on the average, these adolescents made 5 to 6 months gains in reading vocabulary, reading comprehension, and arithmetic fundamentals. Their socialization gains averaged over 4 points on each of the total 28-point scales.

TABLE 1

Mean, Standard Deviation, and Range of Pre- and Post-Achievement Scores, Teacher Socialization Ratings, and Gains in Each Area

	Admission Mean (range) SD	Discharge Mean (range) SD	Gain Mean (range) SD
Reading Vocabulary	3.9 (1.3 to 7.3) 2.2	3.4 (1.3 to 8.6) 3.6	.5 (−.6 to 1.4) .48
Reading Comprehension	3.6 (1.9 to 6.9) 1.9	4.1 (2.1 to 8.9) 2.0	.61 (−1.6 to 3.9) .83
Arithmetic Reasoning	3.7 (1.0 to 8.9) 2.0	4.9 (1.0 to 8.1) 1.4	.56 (−1.3 to 2.4) .63
Peer Relations	13.12 (5.5 to 21.5) 4.9	18.6 (10 to 25.5) 7.5	4.6 (−3 to 9.5) 2.9
Classroom Behavior	15 (6.5 to 24) 5.7	19.58 (13 to 26) 3.4	4.3 (−2.5 to 12.5) 3.0

The mean academic rating for the sample, as obtained from the follow-up questionnaires, was 3.1, with a range of 1 to 5 and a standard deviation of .67. This indicates that the adolescents were performing at or at about the same academic level as their peers in the post-discharge classrooms. The mean socialization rating was 3.5 (range 1 to 5 and SD .81), indicating that the adolescents were performing slightly above their peers in socialization.

To examine the question of validity of gain scores in predicting follow-up ratings, Spearman rank-correlation coefficients (*rho*) were computed. The resulting correlation matrix is presented in Table 2. Correlations exceeding .41 and .54 are significant at the .05 and .01 levels, respectively. It should be noted that since length of admission varied for each subject in the sample, it was necessary to correct for this variation by dividing the individual gains for each achievement subtest and for each socialization rating by each subject's length of stay, *prior* to computing correlations.

As indicated in Table 2, there appeared to be no relationship between gains in either reading vocabulary or comprehension and academic ratings given by placement teachers. On the other hand, mathematics gain scores showed a statistically significant correlation ($p < .01$) with the academic rating upon follow-up. There appears to be no significant correlation between gains made in classroom behavior and socialization ratings upon follow-up; however, gains in peer relationships during hospitalization did correlate significantly with this outcome measure ($p < .05$). No other significant correlations were obtained among other variables, with the possible exception of a slight relationship between gains made concurrently during hospitalization in classroom behavior and peer relationships (*rho* = .355, $p < .10$).

DISCUSSION

The evidence suggests that academic gains made in reading are not predictive

TABLE 2
Correlations Between Gains Made During Hospitalization and Outcome Measures at Follow-up

	Reading Vocab. Gains	Reading Comp. Gains	Arith. Fundam. Gains	Peer Relations Gains	Class Behav. Gains	Outcome in Academics	Outcome in Socialization
Reading Vocabulary Gains	1.00	.178	.285	.016	.169	.091	.136
Reading Comprehension Gains		1.00	-.013	.009	.105	-.059	.117
Arithmetic Fundamental Gains			1.00	-.115	.218	.542	.132
Peer Relationship Gains				1.00	.355	.186	.482
Classroom Behavior Gains					1.00	.042	.087
Outcome in Academics						1.00	.068
Outcome in Socialization							1.00

of how an adolescent might be expected to function in school after discharge from a psychiatric hospital. Progress in mathematics, however, appears highly predictive. Although the reasons for such differential findings in reading and math are unclear, it has been suggested that reading improvement is extremely variable in adolescent populations even under the best of conditions (Lindsley & Kerlin, 1979). On the other hand, systematic individualized instruction in mathematics, at least at the grade levels represented here, might generate a novelty effect which generalizes more readily to subsequent classroom learning (Trembly, Caponigro, & Gaffney, 1980).

Although no significant correlations were found between reading gain scores and academic ratings assigned by placement school teachers, it is important to note the actual gains that were made. These adolescents made approximately a month-for-month gain in both reading and arithmetic during their hospitalization, replicating similar findings with latency age children in the same hospital (Forness, Frankel, Caldon, & Carter, 1980). As also found in previous research, there appeared to be no relationship between academic and social progress (Forness, Silverstein, & Guthrie, 1979).

Another interesting finding was the differential relationship between gains made in peer relations vs. classroom behavior in regard to outcome measures of socialization. While the concurrent gains in each area appeared to be slightly related, only progress in peer relationships seemed to be predictive of a good outcome after hospitalization. In another context, Singer (1978) has noted that personal effectiveness is among the best predictors of placement in special populations. It may be that peer relationships are far more important to success in school, especially during adolescence, than learning to adapt to a particular classroom environment.

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Instruction for Autistic Children: Some Critical Problems and Possible Solutions

Richard S. Neel and Felix F. Billingsley

Despite the optimism implied by legislation at federal and state levels (e.g., P. L. 94–142) and widespread litigation calling for the education of handicapped pupils in ever less restrictive environments (e.g., *St. Louis Developmental Disabilities Treatment Center Parents Association et al. vs. Arthur Mallory et al.*), educational efforts on behalf of autistic children have not greatly affected the quality of their lives. Sullivan (1977) has noted that 95 percent of autistic adults reside in the back wards of large institutions, follow-up studies reveal negligible effects of educational intervention (Lotter, 1974), and members of the special education community at large generally concede that teachers of autistic children face a task of monumental proportion.

Deficiencies in an educational system may be found in the nature of services provided (how and what is taught), in the nature of service delivery (the conditions under which teaching occurs), or in both. The purpose of this paper is to discuss some possible weaknesses in both services and service delivery which may help account for our unenviable record to-date in educating autistic and other severely behavior disordered children. Three specific hypotheses will be considered: (1) we do not know how to teach autistic children, (2) we systematically teach children to maintain and/or develop disordered behavior, (3) we teach the wrong things in the wrong places.

WE DON'T KNOW HOW

Of the three hypotheses, the assertion that our technology is basically deficient or defective seems to be the weakest. To contend that all answers to effective instructional programming are currently available would be seriously overstating the case. There is, however, no compelling evidence that the behavior of autistic children is governed by principles which differ from those which govern the behavior of other humans. In addition, research employing autistic individuals in controlled settings has demonstrated effective strategies for developing a wide range of appropriate behaviors and decreasing inappropriate behaviors. Autistic individuals have, for example, been taught: *communication skills* (Barrera, Lobato-Barrera, & Sulzer-Azaroff, 1980; Lovaas & Newsom, 1976), *kindergarten classroom behavior* (Martin, England, Kaprowy, Kilgour, & Pilek,

1968), *generalized imitation* (Metz, 1965), and *instruction following* (Craighead, O'Leary, & Allen, 1973). In addition, they have been taught *to wear glasses* (Wolf, Risley, & Mees, 1964), *to increase spontaneous play* (Koegal, Firestone, Kramme, & Dunlap, 1974), *to respond to multiple cues* (Koegel & Schreibman, 1977), and *to decrease stereotypic and self-destructive behaviors* (Azrin, Kaplan, & Foxx, 1973; Lovaas & Simmons, 1969).

It seems, then, that existing research has provided a base upon which classroom teachers can at least begin to build effective instructional programs. An examination of the remaining two hypotheses may contribute to an understanding of the discrepancy which exists between the modest success achieved in experimental settings and the outcomes often observed in educational situations.

TEACHING DISORDERED BEHAVIORS

In recent years, educators of autistic and other severely handicapped children have engaged in an orgy of consciousness-raising concerning the application of behavioral technology. Scores of books have been written, workshops attended, and inservice training programs conducted. While the techniques learned are, in fact, often employed in programs aimed at specific, desired behavior targets, they are also frequently misused in such a manner as to maintain or strengthen undesired behaviors. We have noted four types of misapplication which seem to occur with considerable frequency and which can sabotage any training effort.

1. In spite of frequent admonitions to emphasize the development of appropriate behaviors, and the best of intentions, a large number of programs still seem to be geared primarily to deceleration objectives (e.g., to decrease hitting, biting, pinching, light filtering, spitting, hand flapping, echolailia, hair pulling, bizarre posturing, etc.). Because they may result in immediate if not enduring effects, such programs can be extremely reinforcing to classroom staff. The outcome may be a highly punitive training environment with little emphasis on building new, appropriate behaviors. In addition, new behaviors which *are* taught may be discrete skills which produce reinforcers that differ quantitatively and qualitatively from the reinforcers which maintain inappropriate behaviors. The new, appropriate behavior may therefore fail to replace the old, inappropriate behaviors. Not only must we "catch 'em being good," but we must do so frequently. Not only must we teach new skills, but we must teach functional skills which possess generality.

2. Programs which directly reinforce inappropriate behaviors may be implemented. It is tempting to try to distract a screaming child with a desirable toy or snack, or to intervene in such a manner as to deal with the "real" reasons for disordered behavior which lie deep within the child's psyche. In either case, the teacher may be reinforcing disordered behavior in a systematic fashion. By way of illustration, a large, aggressive, deaf, elementary school pupil (Tom) observed by one of the authors was released from his classroom and allowed to play on the playground for five minutes whenever his aggression reached levels which were intolerable to his teacher. The teacher reasoned that the demands of the classroom frustrated Tom, that the frustration was the cause

of his aggressive behavior, and that sending him to the playground provided an opportunity to "blow off steam." An alternate explanation would be that Tom's aggression was being reinforced with great regularity by access to the playground contingent upon hitting other children. Perhaps, had he been provided with access to the playground contingent upon on-task behaviors, his inappropriate behaviors would have decreased. Unfortunately, Tom was expelled from school for severely beating another child before such an intervention could be tested.

3. Workers such as Kauffman and Snell (1977) pinpoint consistent program application as a key ingredient in successful behavior change. Inconsistency, however, may be observed even in the case of experienced teachers implementing highly specific instructional plans (Billingsley, White, & Munson, 1980). Inconsistency is likely to be aggravated in situations in which precise definitions of target behaviors have not been formulated or where teachers fail to commit themselves to program implementation. In the first case, inconsistency may occur across caregivers who interpret vaguely defined behaviors (e.g., hyperactivity) in different ways. In the second case, teachers may fail to differentially reinforce appropriate behaviors. An excellent illustration was provided by a well-meaning classroom staff which implemented a token system in a class of behavior problem children. At the end of the first day of system implementation, no pupil had earned enough tokens to purchase an item from the classroom store. The teachers, therefore, decided to institute a "bargain day" and exchanged items in the store for half of their original token value. It is probable that this experience taught the pupils that their behavior would have no effect on the environment, that all behaviors would result in essentially the same outcome. "Bargain days" have undoubtedly doomed many otherwise well-conceived programs to early failure.

4. We fail to build fluency. This problem is reflected in the measures used by researchers to assess the performance of severely handicapped pupils. Those measures most frequently are simple counts of correct and error responses which may or may not be converted to percentage of correct responses (Liberty, 1976). Such measures provide an estimate of accuracy but do not relate level of accuracy to a time base. In other words, we are satisfied if a child simply can make a desired response and seem relatively unconcerned with the rate, duration, or latency with which the response occurs. The result is likely to be a child with excruciatingly slow response time. If skills are not trained to a fluent level, the child will not have the opportunity to perform them (Billingsley & Liberty, Note 1). Caretakers, for example, simply will not wait 15 minutes for a child to independently put on his or her coat. Nonfluent skills, therefore, are nonfunctional and nonfunctional skills are unlikely to be maintained. It is questionable whether any skill not taught to a fluent level is a skill worth teaching.

The four problems cited above potentially could be remediated in a relatively straightforward manner by such measures as increased attention during preservice and inservice training, self-initiated reminders, and peer feedback programs. The problem suggested by the hypothesis that we teach the wrong things in the wrong places, however, requires a considerably more complex solution involving a change in basic assumptions concerning the nature of services and service delivery for autistic children.

TEACHING THE WRONG THINGS IN THE WRONG PLACES

As previously noted, there is presently a considerable gap between psychological studies and educational practice. Clearly, the knowledge produced by those studies is far in advance of that actually implemented in the classroom. There are, however, two major problems associated with research demonstrations of the technology developed so far. First, the majority of demonstrations have been in artificial or restrictive settings. Second, the technology, although broad in scope, has focused either on trivial content or on behavior reduction. What is needed is to employ our technology to teach critical behavior and modify these techniques to account for the requirements of various natural environments.

The majority of successful teaching techniques have been applied in artificial and restrictive settings and have used highly concentrated vestibule approaches in which a child is isolated 1 to 1 with a teacher. Since the main focus of these programs has been the demonstration of various instructional technologies, restrictive controls have been used. This focus, although admirable as a beginning step, has ignored the development of modifications necessary to accomodate the specialized learning characteristics of autistic children so that they can generalize the skills they learn to other less restrictive settings. Such modifications are essential if these children are ever to profit from a less restrictive educational environment. Previous solutions to this dilemma have been varied. Some have begun training programs for parents so that they can replicate the vestibule experience (Lovaas, 1978). Others have begun investigations into the components of the stimulus complex (Schreibman, 1975; Schreibman & Lovaas, 1973), and others have investigated the reinforcement contingencies of troublesome behavior (Rincover, 1977). These strategies seem to repeat the critical error of their work. retreat from the natural setting. The probability of focusing on another set of irrelevant variables seems highly likely.

A second problem is the lack of demonstrations of learning that actually enhance the autistic child's ability to function in normal situations. Instead, the content of the education effort has been trivial tasks selected from normal developmental sequences. The choice of a developmental curriculum approach can be understood when viewed from a historical perspective. Early investigators focused on instructional technologies rather than specific content. Most of these technologies were developed in psychology labs. The purpose of early efforts was to demonstrate that autistic children could be taught. Once an instructional technology was available, practitioners then searched for content. The question "What do normal children do?" provided an early end to this search. The goal became one of using the new technologies to make autistic children perform the tasks identified as milestones of normal development. Following assessment, each child was "placed" in the developmental sequence and programs were designed to teach the next step in the sequence. This became a race against time: When school time ran out, these children were sent to vocational, residential, and recreational settings unable to function adequately. Success was measured in terms of how many steps along the continua an individual child had moved, not whether instruction made a difference in real life terms. What Lovaas and Newsom (1971) and others have come to realize is that five nouns—or five hundred nouns—are of no consequence when a child does not

know when and where to use them. Water play and rock-a-stack have limited utility for a 20-year-old. And correctly sorting orange triangles does not facilitate selecting groceries at a supermarket. In short, the curriculum that had been demonstrated was one of form, not function.

As Donnellan (1980) points out, the telling question for educators is not whether Johnny can touch purple three consecutive times, three days in a row, across three different settings; rather, the question is "What effect does learning such a skill have on Johnny's life?" Autistic children are difficult to teach and they acquire new behaviors very slowly. They rarely generalize from one environment to the next. We do not have time to train specific developmental pinpoints and hope that "enough will be learned" or that application of skills will be "spontaneous." We must teach functional skills and critical effects instead.

Functional and naturalized social/communication curriculum.

Brown, Wilcox, Sontag, Vincent, Dodd, and Gruenwald (1977) described a functional curriculum for severely handicapped children:

> Severely handicapped students have the right to, and the need for, a longitudinal curriculum that prepares them to function as independently as possible . . . Components of curricula that do not contribute to the development of initial independent functioning skills should be left out . . . (rather than) comparing severely handicapped students with younger age peers, it is often more beneficial to compare present repertoires with the skills necessary to function independently in a variety of environments. (p. 199)

Several other authors have called for a more functional curriculum for autistic and other severely handicapped populations (Brown, Nietupski, & Hamre-Nietupski, 1976; Donnellan, 1980; Donnellan, Flavey, Pumpian, Baumgart, Schneider, & Brown, Note 2; Dunlap, Koegel, & Engel, 1979). They suggest that the content include "functional skills in community functioning, domestic living, recreation/leisure, vocational functioning, and social interactions with non-handicapped peers" (Donnellan, 1980). This shift to what Brown et al. call "ultimate functioning" is definitely a move in the right direction. Unfortunately, such a curriculum has not been developed for or demonstrated with autistic children.

Critical Effects

To generate a curriculum based upon ultimate functioning, one must first identify the critical effects that are necessary for successful independent performance in important environments. A critical effect is not a particular skill, but the outcome or result we want to achieve when we select a behavior or group of behaviors to teach. For example, suppose an autistic child is hungry and the desired effect is that he eat. The child has a variety of behaviors he could use to communicate and/or achieve this. He could: (1) cry or scream until he was fed; (2) pull another person to the icebox and point; (3) sign for food; (4) ask for food; (5) go get the food,; (6) go to a restaurant; or (7) go to the store, buy

the food, and go home and prepare it. Each of these behaviors can produce the same effect, namely a full stomach. Though some of these strategies are more desirable than others, the important point is that they all produce the same *effect*.

Another example of critical effect can be seen by analyzing social interactions. Many autistic children have difficulty appropriately initiating or terminating social interactions. Again, many forms are available to teach these effects, including gestures, signing, or speech. Speech can be understood by the most people, and therefore would be first choice, with signing next, and gesture last. But, if in teaching speech, the social interaction effect is lost, form has overshadowed function. If teaching a gesture would meet the social interaction need of the child, then it should be taught first. If possible, it then could be refined or changed later while maintaining social interaction.

Another example of critical effect is transportation. Many curricula include programs to teach transportation skills such as bus riding. What should be considered is not only how to teach an autistic child to ride the bus, but also what effect riding a bus will produce. If the critical effect is getting to work, then there are a number of alternatives to bus riding (moving within walking distance of the work setting, riding a bike, taking a taxi, riding in a carpool, etc.). Furthermore, though bus riding has apparent face validity (many people would judge bus riding to be a "critical" skill) it may have no functional importance for a particular child. If work/school, recreational facilities, stores, services, and friends are within walking distance, then learning to ride a bus may be no more functional than learning to touch purple. A functional curriculum will include teaching tool skills only when they produce a desired critical effect in the natural environment. The social/communication curriculum must focus on the effect as its criterion for ultimate functioning, and then teach the form that allows the child to operate with as much independence as possible.

Curriculum Development as a Process

Given that each student may need different citical effects (and indeed different forms for achieving those effects) in home, school, and community environments, the curriculum cannot be a static product. Instead it must be approached as a process in which environments are analyzed, critical effects are identified, and particular forms selected based upon individual child needs. Identifying critical effects is central to the curriculum development process. Initially, parents, teachers, and community members would be asked to generate lists of desired critical effects, both in general and for each child in particular. The general listing would become the curriculum menu, and the individual listings (once prioritized) would become the IEP. Each child would need to be taught several critical effects. Several forms for each effect also are possible. The problem facing the teacher would be which combination to use. The proper choice would depend on several factors. The following criteria should govern the selection of the specific form to be taught any student: (1) reliability–consistent production of the desired effect; (2) universality–applicable in a variety of settings; (3) independence–requiring minimum assistance from others; and (4) social acceptability.

Instruction in the Natural Environment

For a curriculum to focus on a variety of skills to enhance ultimate functioning (Brown, Nietupski, & Hamre-Nietupski, 1976), the classroom must become the school, home, and community. The instructional technologies that have proven effective in the controlled laboratories must be transported to the natural setting. If a child achieves the stated goals, the only criterion for success that can be accepted is the enhancement of functioning in the natural environment (Brown, Branston, Hamre-Nietupski, Pumpian, Certo, & Gruenwald, 1979).

IEPs

Each child should have an IEP that addresses critical effects of the school, home, and community environments. It should include the desired critical effects to be taught in each setting and the instructional formats that accommodate individual learning styles of the child. Such a curriculum would develop truly individual IEPs, perhaps for the first time. Individual IEPs could be summed to determine common elements in social/communication areas, across domains, and/or within particular instructional strategies. This information could form the basis for a generalized, empirically-based curriculum. To date, no new curricula have utilized this technique. Since autistic children are idiosyncratic learners, a curriculum based upon both the similarities and differences among learners is necessary. A curriculum process could be developed that would utilize past successes and still allow for interaction of new programs that are developed.

Decision rules

Since this approach depends on data to make decisions, rules need to be developed to help parents and teachers decide when to make changes and what changes to make in individual programs. Rules have been developed for some severely handicapped children (Haring, Liberty, & White, 1980). Rules that are effective on programs that teach critical effects to autistic children need to be developed. The work to date is encouraging, and techniques to assist with acquisition and fluency of new skills have been tested recently (Wolery, Lewis-Smith, & Neel, Note 3). The combination of an assessment package that determines what technique works best with a particular child and an empirically developed set of rules to help decide when to make changes and what changes to make would certainly increase the abilities of teachers and parents. First, the individual learning styles of each child must be determined. Autistic children often develop unique strategies with which they approach a problem. Knowledge of these strategies is essential when deciding how to teach a particular form. These strategies could be assessed by comparing several techniques for a brief period (2 to 3 weeks) and determining under which techniques the child learns most quickly. Paradigms on how to choose a technique could be developed in the actual classrooms. Some of these have already been formulated (e.g., paradigm for selecting expressive and receptive techniques, Wilcox, 1980).

Since autistic children also develop learning strategies that are incorrect, rules

on how to assess and correct these errors also need to be developed. The final assessment product would provide parents and teachers with information on: (1) how to determine the best technique for a particular child, (2) rules for deciding when to use the various techniques available, and (3) methods for discovering and correcting incorrect or inefficient learning strategies.

SOME QUESTIONS TO ANSWER

There is still much that we do not know about how autistic children can be taught in the natural environment. Some of the questions that need to be investigated include:

1. What effect do frequent verbal prompts (nagging) have on acquisition?
2. What effect does functional use of an object as an antecedent or as a consequent event have on acquisition?
3. Does lack of object transposition affect generalization between settings?
4. Can self-stimulating behavior be used as a reinforcer? If so, what effect will that have on the non-contingent rate of self-stimulating behavior?
5. What factors affect the temporal transfer of stimulus control from a prompt to the critical stimuli?
6. What conditions of language training (imitation, signing, or total communication) produce the fastest acquisition? The greatest maintenane? The largest amount of generalization?

Other issues to be addressed are: the comparison of multiple trial vs single trial presentation in acquisition; long- and short-intertrial intervals; the interruption of self-stimulatory behavior; the effects of various levels of performance criteria on the temporal transfer of stimulus control; and serial vs concurrent training on imitation tasks.

The development of generalization techniques must also be the focus of applied research. What is the best way to shift control from a few stimuli in a vestibule setting to the multiple, and somewhat vague, stimuli in the classroom and the natural environment? We know that autistic children discriminate characteristics that are not perceived as relevant by outside observers (Lovaas & Schreibman, 1971; Schreibman & Lovaas, 1973). More work needs to be done to determine what stimulus controls operate in a 1 to 1 setting and how these change when shifted to a 1 to 2, and ultimately to a small group, setting. Are there control shifts that are necessary before a child can profit from a group setting? Can they be taught? If not, are there instructional format or contingency changes that will increase the effectiveness of small group instruction? What changes take place when the group is expanded?

Another problem is the fading of prompts. Prompts are presented with the desired stimulus to serve as a guarantee that the correct response will occur (Koegal, Egel, & Dunlap, 1980). Unfortunately, the prompt itself often becomes the S^D for many autistic children. Many studies have begun to investigate this problem. Koegal and Rincover (1976) demonstrated that the use of extra stimulus cues seriously impaired learning. Schreibman (1975) found within-stimulus prompts to be more successful than extra-stimulus prompts. Risley and Reynolds (1970) successfully used voice emphasis within an instructional command

as a prompting technique. Temporal delay or fading of prompts has also been recommended (Haring, Liberty, & White, 1980; Snell & Renzaglia, Note 5; Streifel, Bryan, & Aikins, 1974; Touchette, 1971). More work should be done to determine when these techniques work and when the do not. Are there subpopulations of autistic individuals who respond to particular prompting techniques, or do different types of tasks require different prompting procedures?

Finally, the best way in which to utilize classroom time deserves study. The classroom organization most often utilized with autistic children is a time-sharing approach: five or six children are seated around a table and a trial is given to each in turn. The result can be that 80 to 85% of the instructional time for each child is non-productive. Far too often this time is spent in non-contingent self-stimulatory behavior. Group instruction is only viable for children who have the skills to profit from observing other children learn. If we are ever to integrate them more fully into less restrictive alternatives, autistic children must learn the skills necessary to profit from other students' learning.

The above questions are only the beginning. Many more can be generated. These questions are different from previous efforts in one important way: They are focused on critical effects to be taught in natural environments. The methodological and measurement problems inherent in working in an open setting are immense. Development of new and more sophisticated measurement devices probably will be needed. Demonstrating experimental control will be more difficult. Long-term studies will be required. The tasks are formidable, to be sure. Nevertheless, they are THE tasks. Other efforts are at best prerequisite and, at worst, a tragic illusion.

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Classroom Hearing Assessment: An Operant Training Procedure for the Non-Verbal, Autistic Child

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Apparent sensory deficits are among the most commonly made observations of autistic children, and are often the very first indication to the parents that something is "not right" with the child. Rimland (1964) writes:

> Once the parents have begun to realize that their child's behavior is not normal, they almost without exception consider the possibility of a hearing deficit. The parents have often been unable to attract the child's attention by speaking to him or calling his name. The child is often described as being 'in a shell,' or as 'so completely wrapped up in his thoughts you can't talk to him' " (pp. 9–10).

The reliability of this observation has been questioned, however, by the difficulty encountered in obtaining accurate sensory thresholds of this population. Commonly used audiometric techniques have not proven consistently effective for autistic children, and alternative methods for auditory assessment have not specifically addressed themselves to this special population and its unique challenges. Lowell (1976) lists several techniques which may be used by the audiologist. These include: pure tone audiometry, modified speech audiometry, tangible reinforcement operant conditioning audiometry, behavioral observation audiometry, impedance audiometry, cribogram, evoked response audiometry, electrocochleography, psychogalvanic skin response audiometry, and respiration audiometry. None of these techniques, however, specifically address the hearing assessment of the autistic child, although some speculation is made concerning potential effectiveness.

A closely related problem involves deficits in attending to sounds autistic children hear. Parents often report that the child who apparently hears a piece of candy being unwrapped in the next room can appear oblivious to (for example) a stack of plates dropped immediately behind the child (Rimland, 1964). Stimulus overselectivity (Lovaas & Schreibman, 1971; Lovaas, Schreibman, Koegel, & Rehm, 1971), defined as attending to only one of several relevant stimuli, has also been seen to be a common characteristic of the autistic child.

The present research is intended to address the following question: Can operant audiometric procedures previously demonstrated effective with mentally retarded, non-verbal children be equally effective with autistic children?

Relevant Literature

Accurate audiometric assessment of low-functioning children, as a necessary pre-requisite to language training, has been described by Bricker and Bricker (1969b). Lloyd, Spradlin, and Reid (1968) describe the most promising techniques in the area of auditory assessment of low-functioning children to be E.E.G. assessment and operant conditioning audiometry. Bricker and Bricker (1969a) cite three reasons why operant conditioning audiometry is preferable to E.E.G. audiometry: cost, usefulness, and the questionable validity of the evoked response. St. James-Roberts (1972) argues, "the results of an autonomic test give a limited measure only of physiological capacity rather than of actual or potential ability to accept and use sound. Until more is known about the functioning of the auditory pathways, these cannot necessarily be equated" (p. 48). The usefulness of behavioral audiometry for difficult-to-test children has been cited by several authors (Bricker & Bricker, 1969a; Fulton & Spradlin, 1975; Lloyd, 1966; St. James-Roberts, 1972).

Meyerson and Michael (1960) carried out some of the first operant conditioning audiological procedures using tangible reinforcers with mentally-retarded, difficult-to-test children. Their procedure was initially an adaptation of a technique that Blough (1958) had used to obtain auditory thresholds in the pigeon. In the Meyerson and Michael (1960) study, sound was matched with light on a two-lever response apparatus: sound was paired with light on one lever; the absence of sound was paired with light on the other lever. As the visual and auditory discrimination was learned, the light was gradually faded, until the child was responding to the auditory stimulus change only. When responding was accurate and consistent, decibel and frequency levels of the pure-tone auditory stimulus were changed until threshold levels were obtained for all frequency levels on a standard audiometer. Tangible reinforcers used for correct lever pressing were edibles, electronic "junk," and commercial trinkets.

Lloyd, Spradlin, and Reid (1968) established tone control on 42 of 50 subjects "typical of most ambulatory, profoundly retarded children in many institutions" (p. 242), and collected pure-tone data on 39 of these subjects. After examining Meyerson and Michael's two-lever apparatus and a one-button response procedure used in some related audiometric procedures, the one-button procedure was decided to be "the one most efficient for our purposes" (p. 238). The reasons for making this decision are not given.

In the Lloyd, Spradlin, and Reid (1968) study, similar to the Meyerson and Michael (1960) study, sound was paired with a light stimulus, which was slowly faded until the subject responded to the sound stimulus alone. A certain validity is established by using the light-sound stimulus as an initial discriminative stimulus. If the subject masters the light discrimination and not the sound discrimination, it can be demonstrated that intellectual ability or sufficient motivation were not reasons for the failure of the subject to master the auditory task. Were the light not used, motivation or ability could be valid issues.

Bricker and Bricker (1969a) investigated four procedures for gaining stimulus control with low functioning children, and described (Bricker & Bricker, 1969b) a general approach to operant audiometry. It is similar to that of Lloyd et al. (1968) in that it employs a light as well as a sound stimulus and elicits a one-lever response. The lever is to be pressed by the subject when the discriminative

stimulus is not perceived. Appropriate lever-pressing is reinforced, and although not responding is not reinforced, inappropriate lever-pressing is followed by a delay in stimulus presentation.

Although a literature search has revealed several successful operant audiometric procedures used on mentally retarded children, none of these procedures has specifically addressed the issue of operant audiometric techniques for autistic children. This appears to be a significant omission because of the unique behaviors and learning styles displayed by this population. Lovaas, Schreibman, Koegel, and Rehm (1971) first described a phenomenon referred to as stimulus overselectivity, whereby the autistic child was seen to respond to only one of several stimuli, often an inappropriate or irrelevant one. This finding has been supported elsewhere (Koegel & Wilhelm, 1973; Lovaas, 1974; Lovaas & Schreibman, 1971; Reynolds, Newsom & Lovaas, 1974). If stimulus overselectivity on a discrimination learning task is likely to be found in autistic children, problems could arise with the fading of a light-sound stimulus to a sound-only stimulus. Likewise, if conditionability (Churchill, 1978) or serious deficits in attention (Gold & Gold, 1975) are problems, modifications may have to be made in the procedure in order for it to be effective.

METHODOLOGY

Subject

The subject was a 4-year-old boy enrolled in a Phoenix-area Head Start Program. He was diagnosed "autistic" on the basis of a behavioral checklist. Behaviors observed in the subject included gross impairment of emotional relationships, his apparent unawareness of his own personal identity, visual and auditory avoidance, lack of any speech, short attention span, distractibility, and minimal social and self-help behaviors. The subject had been referred to a local speech and hearing clinic and had been characterized as "untestable." A nearby hospital had fitted him for a hearing aid, in spite of lack of any audiological data; fitting was considered appropriate on the basis of reports from the mother of a possible hearing loss in the subject's left ear.

Apparatus

Apparatus used were a standard audiometer with earphones, a 24" X 36" panel consisting of two rheostat-controlled 60-watt light bulbs situated above two padded levers (later replaced by two small red buttons mounted on the panel, below the light bulbs), and peanuts and juice used as reinforcers. The subject was seated at a low, circular table on which were placed, the panel, levers, audiometer, and reinforcers.

Procedure

The training procedure took place in the classroom. The subject was placed in a chair at a circular table on which was placed a padded lever. An attempt

was made to place earphones on his head, but he refused to wear them. The subject was reinforced with juice or peanuts for lever pressing, initially at FR1. The ratio was expanded to FR5 as the subject gained more control of his sitting and attending behaviors. He was not reinforced during periods of inappropriate motor activity or vocalization. When the subject had gained proficiency with the FR5 schedule for lever pressing, a panel with two light bulbs controlled by switches and rheostats, and an additional lever was placed directly under each light bulb, and the light on the right side of the panel was turned on. A standard Belltone audiometer with earphones was placed on the table and turned on at 1000cps, 80Db, clearly audible to the examiner. Lever pressing continued to be reinforced at a FR5 schedule, but only pressing of the right-hand lever, below the lighted bulb, was reinforced.

When the subject had attained a rate of 10 correct lever presses per minute, the sound was turned off, the left bulb was turned on, and the right bulb was turned off. The subject was physically prompted and reinforced for pressing the left lever, but not for pressing the right lever. Two more such shifts were prompted, following which the subject was expected to make the discrimination himself. Light and sound were changed, at variable time intervals, and the subject was reinforced for pressing the lever directly beneath the lighted bulb. The time period for the presentation of each stimulus was varied to remove the possibility that the subject would learn to respond to a temporal sequence, rather than to a stimulus change.

When the physical prompts were faded, the subject returned to random responding, often hitting one lever exclusively, and apparently ignoring changes in the visual and auditory stimulus. In order to facilitate the discrimination learning, the subject was given a 10-second "time out" for errors, during which his chair was pulled away from the table, and the opportunity for gaining reinforcement was eliminated. This intervention apparently facilitated discrimination learning, as the subject was brought to the desired 90% correct responding criterion within three sessions.

Other unanticipated problems, however, necessitated a change in the apparatus. The subject began responding inappropriately to the levers (e.g., banging on the levers with both hands and screaming, or pinching and tearing at the padding), so that reinforcement often could not be given even though the correct discrimination had been made. The decision was to eliminate the levers, and substitute small (¾") square red buttons, which could be pushed in, but not otherwise manipulated. Transfer of response from lever to button was instantaneous, and inappropriate behaviors ceased.

At this point, earphone wearing was taught by making access to the panel, and consequent reinforcement, contingent upon earphone wearing. If the subject removed the earphones, he was removed from the table. The subject learned within three trials to keep the earphones on his head, and even later, during the course of training, he began putting the earphones on his head himself.

With stimulus control established on a changing sound-light stimulus, the lights were gradually faded, using the rheostats, until the subject was responding only to a sound-on/sound-off stimulus, in which he was to press the right-hand button if he heard a sound, and the left-hand button if he heard no sound. With the levers replaced by buttons, results were computed as distinct and separate

trials in which the subject had one opportunity to make a correct response. If he responded correctly, he was reinforced and the panel was moved back prior to a new trial. If he responded incorrectly, the panel was moved back without reinforcers being given.

Although the subject always responded more than 50% correct, he seemed to be approaching the predetermined 90% criterion very slowly. After 23 training sessions of approximately one half hour duration each, the subject continued responding correctly on 67–75% of total trials. Considering that this pilot study was intended to demonstrate a procedure to be used in the classroom, with time necessary for completion a major consideration, the decision was to abandon the arbitrary 90% correct criterion in favor of a demonstration of non-random responding. Consulting a binomial table (Siegel, 1956), it was seen that applying a one-tailed test to a series of 21 trials, 15 correct responses would represent a value of $p < .02$. Using two blocks of 21 trials, with 1000cps, 60db the only discriminative stimulus, the subject responded correctly 16 times on both consecutive blocks of trials, establishing virtually no chance of his responses having been random.

RESULTS

The subject was taught to respond reliably to a sound/no-sound discrimination, with sound stimulus being 1000cps, 60db, administered through earphones to the right ear. However, the subject and his family unexpectedly left the state before complete threshold readings could be obtained. From this point, however, it is postulated that a complete threshold easily could be taken by gradually lowering decibel levels for each frequency until the response could no longer be considered non-random, or when the non-random responding appeared in the opposite tail. The point at which the subject could no longer be considered to be responding to an administered sound could be considered the subject's threshold for that frequency.

DISCUSSION

It was shown that an autistic child can learn an auditory discrimination task necessary for audiological threshold information in a manner similar to that used with mentally retarded children. One problem was the extra amount of time on task necessary to train the auditory discrimination. Lovaas (Note 1) has indicated that autistic children may be extremely slow to learn a discrimination task, and the present study seems to support that finding. Meyerson and Michael (1960) indicated that most mentally retarded children were brought to criterion on a similar task within three 30-minute sessions. The subject in the present study underwent 24 30-minute sessions and still was far short of perfect responding. A method proposed to eliminate unnecessary time on task which could otherwise be more profitably used was to determine with a binomial table the level at which responding could reasonably be considered non-random. In

this manner, the classroom teacher could do much to obtain the audiological data necessary for effective language programming.

IMPLICATIONS FOR EDUCATION

There are three major implications for education that arise from this study:

1. An auditory threshold is necessary before any accurate language programming can be done. An audiometric procedure which teaches a response to sound is educationally superior to measures which do not, because it demonstrates what the child can respond to, rather than simply revealing some automatic physiological reactions. The educational relevance of the operant procedure in facilitating the discrimination learning task has been described well by Lovaas (1977): "Discrimination learning underlies meaningful speech and anyone who teaches language must understand this concept" (p. 18).

2. Many audiologists do not have the time or training necessary to teach response to sound as an operant measure. The procedure described is one which can be applied in the classroom as a component of the total educational program. If the classroom teachers do not feel competent to administer the complete audiological assessment, they can simply teach the correct response to sound stimulus, then take the child to an audiologist, who would then be able to complete the assessment.

3. The task which the child learns in the course of this procedure may be used for other educational tasks, if attending to sound has been a source of difficulty. Once the child has learned the auditory discrimination task, the tasks and apparatus can be modified to include such programs as localization to a sound source, and fading of the pure tone accompanied by the increased use of the human voice as a discriminative stimulus. Thus, the procedure may be used not only for hearing assessment and the subsequent programming of expressive language, but also as the basis for training receptive language.

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Transfer of Training in Severely Autistic and Severely Retarded Children

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ABSTRACT

Eight severely autistic children (behaviorally defined) and an equal number of severely retarded children, matched on Vineland SA scores, were administered a two-choice discrimination learning task involving the dimension of size. Learning was continued until a criterion of 20 consecutive correct responses was reached. No differences between groups were found. A transfer of training task was administered immediately after reaching criterion on the original learning. Size continued to be the dimension discriminated, but the shape of the objects was changed. The results indicated that group differences on the transfer task were not significant, however, the autistics significantly improved their rates of learning efficiency, compared to the results on the initial task. The latter was not found to be characteristic of the retarded group.

Much of the clinical literature on childhood autism suggests that children with such a condition are cognitively superior to children diagnosed as severely mentally retarded. One difference suggested is that, at least on a selective basis, the autistic child is able to demonstrate the capacity to function at a higher level of ability than can be observed in the retarded child. The selective superiority of the autistic over the retarded child has been labeled "islands of intellectual functioning" or "idiot savant" ability.

However, the few experimental studies which attempted to compare the two groups failed to indicate any consistent pattern of ability that might differentiate the learning characteristics of autistic and retarded groups. For example, Wilhelm and Lovaas (1976) reported that cue use in discrimination learning was a function of intelligence rather than the diagnostic classification of autism or retardation. These authors, along with others, had previously studied stimulus overselectivity and initially concluded that this problem was uniquely characteristic of autistic learning. Stimulus overselectivity was defined as the tendency to respond to only one dimension of a stimulus complex. However, when Wilhelm and Lovaas compared autistic and retarded groups, they concluded that overselectivity was related to low IQ functioning, rather than to specific diagnostic classifications. In contrast, Arick and Krug (1978), using a rote sequencing and labeling task, reported that an autistic group required six times more responses to master the experimental problem than did a sample of severely retarded children.

There has been a total absence of experimental studies of transfer of training comparing severely retarded with severely autistic children. Earlier works, such as by Kozloff (1974), suggested that autistic learning was situation specific: that any slight modification of the environment would result in an absence of transfer effects. Kozloff's conclusion appears to be consistent with the work of Lovaas and his associates in the area of stimulus overselectivity (Lovaas, Koegel, & Schreibman, 1979).

With respect to the retarded, there is ample evidence of transfer of training effects, given a variety of specific conditions found to promote this phenomenon (Borkowski & Cavanaugh, 1979; Kaufman & Prehm, 1966).

Likewise, there is at least some evidence of the ability of autistic children to generalize responses to new situations. For example, Hung (1980) reported that autistic children could learn to generalize two mands, "yes" and "no," to food items. However, extensive training on specific food items was required before evidence of generalization was obtained. Likewise, Zifferblatt, Burton, Horner, & White (1977) demonstrated that behaviors reinforced in one setting generalized to another setting, provided that the autistic children were given daily practice over an extended period of time.

There is a need to refer to a more general problem that has plagued much of the research effort in the area of autism and makes for difficulty in drawing firm conclusions about the learning characteristics of autistic children. This problem lies in the unsatisfactory job many investigators have done in specifying the nature of the autistic populations they are studying. Too many studies have used the term *autistic* without further elaboration. At times, authors have referred to the fact that children were "carefully diagnosed" as autistic by a psychiatrist or psychologist. Since these professionals differ radically with respect to which children should or should not be included in such a group, it is not surprising to find that the subjects of various studies have been markedly dissimilar. As Rutter (1978) points out, there is a need to determine which particular symptoms are both universal and specific to the autistic group. Rutter suggests three general sets of symptoms including: (a) a profound and general failure to develop social relationships; (b) language retardation with impaired comprehension, echolalia, and pronoun reversal; and (c) ritualistic or compulsive phenomena as suggested by Kanner's term, "preservation of sameness."

The present study was based on classification of subjects using a series of observable and measurable behaviors. Thus the autistic group clearly demonstrated known deficiencies unique to that group and not present in a comparison group of severely mentally retarded children. A combination of teacher-rated behaviors and direct observation was used. Acceptance into the autistic group required that the children exhibited unique and specific deficits not found in severely retarded subjects. Thus, in all instances, behavioral criteria were employed for distinguishing between autistic and retarded children within a severely handicapped population.

METHOD

Subjects

Subjects were eight severely retarded children and eight severely autistic children. As indicated above, many previous studies have been imprecise in defining

in behavioral terms the nature of the distinction between experimental groups of autistic children and retarded children. For purposes of this study, inclusion in the autistic group required an absence of evidence of specific illness, injury, hereditary state, chromosomal abnormality, etc., known to produce mental retardation. The following two characteristics had to be present in all autistic children: (a) preservation of sameness, and (b) lack of eye contact. For the preservation of sameness characteristic to be considered present, the child's teacher had to rate him/her as being upset by minor changes in the day-to-day environment (e.g., changes in scheduling of daily activities, rearrangement of furniture, personnel changes); or the child had to exhibit complicated rituals which made him very upset if not followed (e.g., putting many dolls to bed in a certain order, taking exactly the same route between two places, dressing according to a precise pattern, or insisting that only certain words be used in a given situation). Eye contact was judged absent if the child did not make and hold such contact for a minimum of three seconds on three of four consecutive trials (each trial separated by a 10-second interval). Each trial was preceded by the experimenter's calling out the child's name and saying "Look at me." The same procedure was repeated on the next day in order to check the reliability of the findings. If there was any lack of consistency in the two observations, the criterion was raised to the child's exhibiting the behavior on two out of three occasions. Thus if a child showed a lack of eye contact on three out of four trials on one day and not on the next, a third observation was made a day later.

Besides having to exhibit preservation of sameness and consistent lack of eye contact, each autistic child also had to exhibit at least two more of the following behavioral deficits: (a) mutism, non-functional verbalizations, or echolalia (teacher-rated); (b) lack of obvious effort to communicate nonverbally through the use of gestures and facial expressions (teacher-rated); (c) non-compliance with simple verbal requests (simple commands which the examiner presented along with appropriate gestural cues); (d) unwillingness to accept play object offered by the examiner; (e) unwillingness to accept physical contact (either sitting on the examiner's lap, in the case of the smaller and younger children, or accepting physical stroking on the shoulder, in the case of the older children). Teacher-rated behavior categories were done just once. All examiner-observed behaviors were repeated twice during observation periods separated by one day. Only those children who met the above criteria were included in the autistic group. A total of 36 "autistic" children attending educational classes for the severely emotionally disturbed were screened in order to find 8 who met the criteria described above. It is reasonable to consider the present sample of autistic children representative of a very severe form of the disorder.

Selection of the severely retarded group represented the reverse of the characteristics defining the autistic group. In order to qualify for the retarded group, a child had to show evidence of a specific illness, injury, hereditary state, chromosomal abnormality, etc., known to produce mental retardation. None of the retarded children selected exhibited preservation of sameness and lack of eye contact, as defined above. Additionally, if a retarded child exhibited more than two of the other behaviors associated with autism (mutism, obvious lack of effort to communicate, etc.), he/she was not a subject for the present study.

The Chronological Age (CA) range for the autistic group was 7-3 to 13-0, and,

for the retarded group, CA range was 9-1 to 12-9. The two groups were equated on the Vineland Social Maturity Scale (Doll, 1953). Mean Social Age (SA) of the autistic group was 2.83; for the retarded group, mean SA was 2.45. Neither CA nor SA were significantly different.

Procedure

The original task was a two-choice size-discrimination problem. Specifically, the initial task involved discrimination of a large square block (10 mm X 10 mm) from a small block (6 mm X 6 mm). The transfer task involved discrimination of a large cup (12 mm high; 7.5 mm top diameter; 6.5 mm bottom diameter). The color of the two blocks and cups was the exact same shade of pink. The larger object was the correct response in both original and transfer tasks. Each child was seated at a table where there was a two-hole wooden tray. The holes were 5.63 mm in diameter, and the distance between the holes was 14.38 mm. During a brief adaptation period, all children were taught to move a single large or small object to receive a reward of either a fruit-loop or a raisin. Original learning commenced when the examiner was certain that the child had learned to displace objects to receive the reward. During pre-training, care was taken to prevent development of position habits or size preferences by using either a single large or small object and placing the reward alternately in either the left hole or the right hole.

Original learning was continued to a criterion of 20 consecutive correct responses to the large block. A maximum total of 100 trials was presented on any given day. Transfer training was initiated immediately following the point of reaching the 20-correct-response criterion. With only two exceptions, all children completed both the original and transfer tasks to criterion of 20 correct responses to the larger object, on the first day. In the two exceptional cases, a second session on the next day was required. When a second session was required, the criterion of 20 correct responses on the original task was reestablished prior to the initiation of transfer training.

RESULTS

Table 1 presents the results on both original and transfer tasks. Mean trials to criterion on original learning for autistic and retarded groups are 48.25 and 37.26, respectively. The results of a t test indicate that the obtained group differences were not significant, $t(14) = 1.19$, $p > .05$. The mean criterion scores on the transfer task for autistic and retarded groups are 28.25 and 29.50, respectively. The results of the t test, again, did not reach significance.

A further analysis of the data was performed to determine if the rate of improvement within either group increased from the original task to the transfer task. This analysis compared autistic learning on the first task with autistic learning on the transfer task. The same comparison was made for the retarded group. Using a correlated t test, the results for the autistic group indicated that it required significantly fewer trials to reach criterion on the transfer task than on the original task, $t(7) = 2.33$, $p < .05$. A similar comparison evaluating the

TABLE 1
Mean Trials to Criterion on Original and Transfer Tasks

Group	Original Learning	Transfer Learning
Autistic	48.25[a]*	28.25
Retarded	37.26	29.50

[a]compares autistics on original and transfer tasks
*$p < .05$

improvement of retarded children from the original task to the transfer task was made. The results were not found to be significant, $t(7) = 1.30$, $p < .05$.

Error Analysis

An analysis of various types of errors made by the two groups was also undertaken. The errors examined included stimulus perseveration (PS), position preference (PP), response shift (RS), and differential cue (DC) errors. Stimulus perseveration refers to the tendency to repeat incorrect choices in subsequent trials of the same problem. Position preference is defined as the tendency to consistently respond to the left or right position in a discrimination task. Response shift is defined as the tendency to try out or explore both stimulus objects in a discrimination learning task. Differential cue errors refer to the frequency of errors on those trials on which the correct stimulus object changes position from the previous trial compared to errors on trials on which the stimulus remains in the same position. The use of such analyses affords an opportunity to pinpoint the type of errors which may systematically interfere with learning. Available research clearly suggests that position preference errors are characteristic of the mentally retarded (Ellis, Girardeau, & Pryer, 1962).

Table 2 presents the percentages of each type of error made on the original and transfer tasks by both retarded and autistic groups. The only finding of significance was that the autistic group completely eliminated position response errors on the transfer task, whereas these errors increased in the retarded group. Using a t test, group differences between autistic and retarded children were found to be statistically significant, $t(7) = -3.07$, $p < .05$.

A further analysis of errors was undertaken to determine if the autistic group's pattern of errors showed changes from the initial task to the transfer task. A similar analysis was undertaken to determine if the autistic group's pattern of errors showed changes from the initial to the transfer tasks. A similar analysis was undertaken for the retarded group. In all cases, a correlated t test was used. The results indicated that the autistic group made significantly fewer position errors on the transfer task than on the initial task, $t(7) = 2.36$, $p < .05$. With respect to the retarded group, these children showed significantly fewer perseverative errors on the transfer task, compared to their performance on the initial problem, $t(7) = 2.43$, $p < .05$.

TABLE 2

Mean Percentages of Error Factors Made by Autistic and Retarded Groups

	PS	PP	RS	DC
		Initial Task		
Autistic	3.88	14.25	7.63	8.50
Retarded	2.25	10.25	8.63	6.38
		Transfer Task		
Autistic	.75	0.00	3.13	4.25
Retarded	.25	4.50*[a]	4.13	2.50

[a]compares autistics with retardates on percentage of PP errors made on transfer task.

*$p < .05$

DISCUSSION

The present findings suggest that, while both retarded and autistic children are more effective in their performance on the transfer task than on original learning, the autistic group appears to show significantly greater improvement. Mean trials required to reach the transfer criterion drop 41.6% from the trials required for original learning, whereas the retarded group drops only 20.8% from the mean trials required for original learning.

The present findings indicate that autistic learning is not always situation specific. Further, the findings are at odds with certain predictions derived from research on overselectivity (i.e., that autistics attend to a single stimulus dimension and are not able to generalize a correct response strategy to a new discrimination problem). The overselectivity prediction would be that autistic children who master an initial task will show no evidence of gain when confronted with a change in the stimulus context (responding to a large cup instead of a large block).

Yet there is some possible resolution of the present findings with previous overselectivity research. First, Lovaas, Koegel, and Schreibman (1979), in their recent review of overselectivity studies, suggest that not all autistic children exhibit overselectivity. Second, and perhaps even more important in the present context, is the Lovaas et al. (1979) suggestion that overselectivity may be a function of the number of stimulus inputs (i.e., the more complex the stimulus, the more likely the occurrence of overselectivity). A case can be made for the position that the present transfer task was not sufficiently complex to produce a great deal of overselectivity. Hermelin and O'Connor (1970) lend credence to this view. Their research suggests that size is the easiest discrimination to be made by autistics, as compared to shape and color discrimination. Had either of the latter two types of discrimination been studied, it is conceivable that the results would have been quite different.

Another factor that might have enhanced the transfer effects in both groups is that the criterion of original learning required 20 consecutive correct responses. Such a stringent criterion conceivably could have produced overlearning, a factor which might have facilitated transfer effects.

With respect to the types of errors made by the two groups, the results indicated that there were some clear-cut differences between the groups in terms of the mode of responding to the initial and transfer tasks. It is clear from an inspection of Table 2 that both groups made a smaller percentage of errors on the transfer task than on original learning.

In conclusion, there is a general need to develop a body of systematic experimental evidence concerning the learning characteristics of autistic children. No generalizations can be made until there is more evidence available. Of particular importance is the need to specify more carefully the characteristics of the populations of children being studied. Research using children with poorly delineated behavioral characteristics will continue to impede clear understanding in this area.

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Who's Crazy?

C. Michael Nelson

Please let me begin by being candid with you about my motivation for selecting this topic. I have spent the past 15 years in the crazy kid business, and in this period, have begun to observe some patterns that are disturbing to me (no pun intended). So I would like to share with you a few of my perceptions about our field. These perceptions, of course, do not reflect an official position taken by CCBD (although I wish they did). I am solely responsible for portrayals of the insanity to which I am about to subject you.

The logical way to begin, from a scientific point of view, is to operationally define "crazy." I intentionally chose this term over the jargon such as "psychotic," "emotionally disturbed," or "behaviorally disordered," more acceptable in our profession, because it more accurately conveys my impression that such labels are readily applied to anything or anybody we do not understand or with whom we disagree. For example, I think the Ayatollah is crazy. The judgement that someone or something is crazy is relative and situational. It depends upon who is doing the judging, the standards against which they are judging, and the limits of the context in which the judgement is applied. Thus, my judgement of the Ayatollah reflects only my limited perception of his conduct in international relations. I do not necessarily believe that he thinks Martians have invaded his brain, or that he drinks a case a week of Jack Daniels.

Anyway, I am going to opt out of defining craziness at the outset, and instead, allow you to use your informal, private frame of reference to define this term. As I go on, perhaps we will develop some consensus about what this means. I certainly hope to leave you knowing what *I* think crazy is.

So, who is crazy? The way I see it, we have several candidates for the title. You might think of this as a multiple choice test. Is it: (a) kids-our traditional choice; (b) ourselves-by which I mean teachers, teacher trainers, and other professional caretakers; (c) the "system"-which includes school, agencies of state and federal government, as well as professional organizations; (d) society itself; or (e) all of the above? I would like to examine each of these alternatives briefly.

First, let us take children. The "bad kid business" depends on the existence of bad kids; and there appears to be no shortage. Decreases in the supply of crazy children which might be predicted on the basis of declining birth rates have beem compensated by such factors as new drugs, widely varying standards for behavior, and the like. As William Rhodes (1967, 1970) has pointed out, it is convenient to claim that craziness resides in kids, because they are the weakest, the least able to resist being labeled and intervened upon.The question is "Should we?" The logical answer to this is, "It is our job." And a logical rejoinder is, "*Should* it be our job?"

In any case, if children are our targets, the next question is, "What are we

supposed to do with them?" There seems to be a fair consensus that we should change them. If that is true, what should we change them into? Should they be like everybody else, or different? If different, how do we keep them from being called crazy anymore? Instead of changing them, should we teach them to cope with us, and with the systems that daily impinge upon them? Or, should we teach them to change us? Perhaps the best we can do is simply to reach them, and to provide what support we can during their formative years.

My point is, the decision that children own the craziness of which we speak does not solve our problem. Instead, it opens a Pandora's box of problems and conflict: What should we do with them; where should we send them; how do we know whether we have succeeded or failed with them? Our field is characterized by diversity regarding these issues. My belief is that some kids are, in fact, crazy. Some are "driven" crazy, and others, perhaps most, are made to look crazy because it takes the pressure off of us.

Our next candidate is the agents of change—ourselves. To relieve your anxieties, let me hasten to point out that I myself am crazy. There are people who can fill you in on the specific details of my disorder, if you are interested. Their names are in the phone book.

But anyway, to explore the question of whether we all are crazy, I have prepared a little self-test, which you may answer covertly. This test is called, "Are You Crazy?" Please clear your desks, and keep your eyes on your own mind. Ready? The first question is, "Are you happy?" Are you fulfilled by your personal life, or by your career? Do you like the people you live with? Do they like you? Do you do things that depress you? Do you do things that you do not understand? How do you react or feel when people fail to do things that you expect them to? Do you feel constantly angry or guilty toward someone?

How are you doing so far? I hope you appreciate my omitting such trick questions as "Have you stopped beating your spouse?" The next set of questions relates more to you, as a professional. Ready? Okay.

Who's interest are you serving in the classroom? Your principal's? The parent's? Yours? Your students'? Do you have objectives for your pupils? Who developed them? Are they appropriate? How do you know? Do you evaluate and revise your objectives frequently? Do you teach, or do you present information? Do you manage the classroom environment, or do you control behavior? How do you respond to your best pupil? To your worst? Do you think IEPs are meaningless paperwork? Do you teach from them? Do you talk about your students as people, or do you use terminology which establishes them as "different" and yourself as a holy cow?

Now, here are some questions for supervisors and teacher trainers. Do you work in your office? Do your subordinates come to you, or do you go to them? Do they enjoy your company? Your professional advice? Do you care if your teachers or trainees are competent? Are you afraid they might appear more competent than you? Are you more concerned with having no problems to deal with? With getting published? Do you use the same techniques to train teachers that you want them to use in the classroom? Do you train them to use techniques which have been empirically validated, or those which establish you as an esoteric specialist? Do you know what your teachers do in the classroom? Do you care?

Okay. Close your test booklet, and make sure your name is on the upper right hand corner. There is no standardized criterion for this test, but I am sure we all would come off as a little bit crazy, if we answered these questions honestly. It reminds me of a conversation between a student and a tour guide on a field trip to a mental hospital. The student asked the guide, "How can you tell the patients from the staff?" The guide replied, "The patients are the ones who are improving." It is all right to be crazy, in fact, in our business, it even may be necessary. As Rhodes says, we should celebrate deviance. Unfortunately, too often we are defensive about our craziness, and fail to see how our needs interfere with serving our children. It is easier to blame the pupils than to admit our own shortcomings.

Let me turn now to the "system." In this category, I would just like to point out some practices that are, in my opinion, crazy. First, let us examine special education as it typically is practiced in the schools. Special education services are designed to be available only to children who have been given an official label, and generally these services are confined to special places, away from the mainstream. This separation has created two distinct worlds, what Reynolds and Birch (1977) call the "Two Box Theory." Special educators use special methods, talk in a special language, and fail to communicate with regular educators, who live in that other separate box. Public Law 94-142 notwithstanding, we are failing to create the kind of regular and special education mix that ensures successful mainstreaming. But why should we? If building administrators do not know our special technology or speak our special language, they cannot hold us accountable. Of course, neither can they hold accountable regular educators who cannot work with, or refuse to work with, our children, because they also lack our special skills. At one time, I facetiously suggested a slogan for CCBD: "Bad kids is good business." And so it is. As long as we reinforce regular educators for throwing in the towel, for labeling and excluding special children, we will have reasonably secure jobs, doing just what we have done for years, which is to keep the bad kids under control and out of the way.

Much of what we do in the schools is dictated by policies within the federal and state government, policies which never cease to amaze me. For instance, despite mandate PL 94-142 to move special education toward the regular classroom, despite the existence of a powerful and accountable technology of teaching, and despite evidence that a non-categorical, training-based service delivery system can work, we perpetuate the practice of funding special education on the basis of diagnosing and labeling "populations" of children. Practitioners are compelled to identify, test, and label a certain number of children in order to receive financial programmatic support. This "numbers game" exists because special education is defined in terms of serving a fixed percentage of the school population. The bureaucratic response to finding increased numbers of children requiring special help is to "harden the categories;" in other words, to make definitions of special populations more restrictive, and thereby exclude more children from the services they need. For example, the government will fund special education for no more than 12% of the school population. The definition of the "severely emotionally disturbed" is restricted to no more than 2% by federal law. This means that many children are deprived of services until their problems reach a level of intensity sufficient to warrant inclusion in this top (or bottom) 2%.

Furthermore, access to special services is based on information gathered from

instruments, the reliability and validity of which have been questioned for several years (e.g., Arter & Jenkins, 1979; Ysseldyke, 1973). Funds are available *only* in proportion to the number of handicapped children identified by these instruments. In case you are interested, the formula for awarding special education funds to state departments is:

> National average per pupil expenditure X 40% X number of handicapped pupils identified.

As if this were not enough, the federal government complicates the numbers game by periodically recounting handicapped sub-populations and adjusting its program and training support priorities on the basis of which group currently is getting more or less than its rightful share of the available goodies. Over the past several years, these priorities have shifted from mild to severely to multiply handicapped, from the emotionally disturbed to the learning disabled, and back to the emotionally disturbed. This keeps all of us on our toes, trying not to get buried in the shifting sands and scurrying to identify enough members of the population in vogue to obtain money to support our programs.

No doubt, many of you think that I am overstating the case, and perhaps I am. While I do believe the government is motivated by a sincere desire to meet the needs of the handicapped, I fail to see that current policies are the best way to accomplish this goal.

The last, but certainly not the least, agent of the system which I would like to examine for craziness is professional organizations. For what purposes do they exist? According to our constitution, the purposes of CCBD are to promote the education and general welfare of children and youth with behavioral disorders or serious emotional disturbance, and to promote professional growth and research as a means to better understand the problems of these children. These sound pretty good to me. But what objectives do professional organizations serve in practice? A decade ago, Lilly (1980) observed that the major concern of the membership of the Council for Exceptional Children, as expressed in the Delegate Assembly at the 1970 convention, was more efficient and effective means of processing membership forms and renewal notices.

My point here is that, whatever the basis for establishing an organization, its purpose evolves into self-perpetuation. Often, this means acting in ways contrary to the original service goals of the organization. I believe that CCBD should be a support system for professionals in our field. Toward that end, we have established a reputable journal and a network of communication and services spanning the United States and Canada. Yet, I am appalled by our members' apparent lack of interest. Only a few hundred persons, out of a membership of 5,000, cast ballots in the last two national elections, and a bare, 33 members, responded to a questionnaire designed to obtain input to use in revising our journal. If something is not crazy here, at least it is very wrong.

The last area that I set out to examine is society. I am not going to do this for two reasons. One is that Bill Rhodes wrote a penetrating essay on the craziness of cultures in the August issue of *Behavioral Disorders* (Rhodes, 1980). The other is that you can sit down and read or watch the evening news and see for yourself whether we live in a crazy world.

So, what does crazy mean? To me, it means that we operate in ways contrary

to our avowed goals and objectives. In other words, our behavior becomes self-defeating. This definition applies whether we are talking about individuals or entire social systems. Obviously, I think craziness exists in all of the levels that I have been describing. Yet, since we are bigger and stronger, because our institutions are more established (and even stronger than us), we focus our attention on the craziness we allege to reside in children and insist that the changes occur in them instead of in ourselves. The enemy, therefore, is us.

Can we change things? I think we can, and in some areas, we have. What we need is a new special education. I advocate the training-based model proposed by Steve Lilly 10 years ago (Lilly, 1971). The major components of this model are support services in the regular classroom, and training and support for teachers and for kids experiencing problems, not just for kids with labels. I also advocate new contingencies or reinforcement. These contingencies include teacher certification and advancement based on demonstrated competence and achievement of child objectives; program funding based on services, not on numbers of children; and special education services which are provided to those in need, not just to those who have been labeled. Such reform requires supervisors who are themselves knowledgeable; a knowledgeable and involved public; and application of our technology to the systems that affect the education of all children.

"It can't be done," you say. "It has been done," I say. Examples include Vermont's Consulting Teacher program, which has been providing non-categorical mainstream support services for over 10 years to children in educational need (c.f., McKenzie, Egner, Knight, Perelman, Schneider, & Garvin, 1970; Knight, 1978). A more recent example is Minnesota's Special Education Resource Teacher delivery system, piloted by Stan Deno and Phillis Mirkin (Deno & Mirkin, 1977). The February issue of *Behavioral Disorders* will discuss teacher consultation as a support system for teachers and children in mainstream settings. Ken Howell and his colleagues have written two revolutionary textbooks about special education methods (Howell & Kaplan, 1980; Howell, Kaplan, & O'Connell, 1979).

Extending applications of this "new" special education throughout the country requires that we examine what we are doing, drop some of our cherished beliefs, and go to work on changing ourselves and our systems. If we fail to do this, we are indeed crazy.

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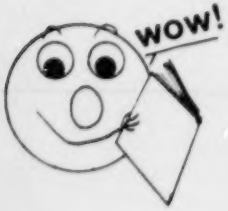

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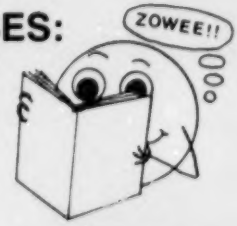

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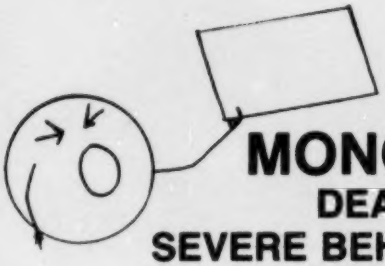

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